Notebook, N-07-03-19

This notebook covers the period March-May 1907. All entries are by Edison. The book contains notes regarding projects to be undertaken and hypotheses to be tested, along with other theoretical speculation pertaining to the properties of electricity. Included are entries relating to x-rays and "xyz rays," the electromotograph, storage batteries, and incandescent lamps. Several of the ideas were tested, and the results are noted by Edison marginalia. The book appears to have been used primarily at Fort Myers, Florida. The front cover is labeled "Experiments & Theory." The book contains 198 numbered pages.

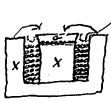
March 19 1907

Use Radium near surface of chalk of Emq lead shutter, also if get sounds, try a lot of
1 matter, metals, and oxides etc. Possibly other radiations not discoverable by Elec, Photo, Try X ray tubes and light etc also different chemicals to wet chalk.

As there is a stress in a dielectric and movement
2. of molecules its probable a chalk wet with non-condrs will alter friction in Emq

See if X ray radium etc alters capillarity
3 in glass tubes of any liquid.

4



X X magnet
G glass dish to
Crystallize in magnetic field, felt between dish and mag

5

Crystalize fflourescent and phosphorescent crystals in closed box in dead dark, absorbing water, with H_2SO_4 = Use cold saturated solutions, then see if more sensitive to X ray and radium

6

Run down why different chemicals on slides gave black rings on photgha fflourescent crystals.

7

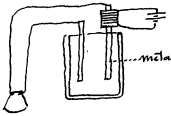
See why Lead point on chemical paper gives black marks on Cathode, is it PbH.

8

Use sodium salts near pure Bunsen burner flame, use spectroscope, then let X ray and Radium strike crystals + note if any sodium molecules are split off and thrown into flame. Try Thallium, Lithium

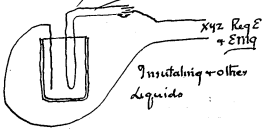
9

See if absorption spectrum of solutions is changed by X ray and Radium passing through straight and at right angles also when subject to X and magnetism and Electric stress as well.



Run set expmts all combinations for E also try XYZ instruments, Emg

11

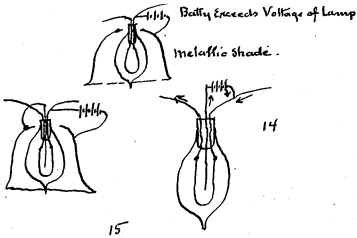


12

See if Al_2O_3 can be deposited on solid polished metal Nickel for instance to permit of electrolytic rectifier, try Beryllium,

13

Experiments to neutralize carrying in incandescent lamps.



With center wire see if Emg will detect oscillations make center wire of different metals see if secondary current increased.

16

Try CP Benzol cell, metallic electrodes, one bare the other coated with a solid substance by dipping in a melted solution of a substance which dissolves in Benzol. = Use intermittent break XYZ & E + EMG instruments.
also try CP Acetone Anhy Conc H_2SO_4
Use melted Organic salts which will cling to electrode when dipped therein
Try various metals.

17

Try precipitating in Tubes in a helix ditto powerful magnetic poles. also prepare colored precipitates in dead dark dry them + note color in daylight.

18

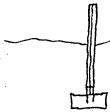
Make crystallizations in the dark.

19

See if can photograph Aluminium scintilizations with Condenser contact, Leyden - ditto
Cerium Magnesium + metals which give white light, Make alloys metals see if can roughly decide % of each,

20

See if magnetic lines alter surface tension of a drop, different chemicals also heigths of different liquids in capilliary tubes



Albert coat capilliary tube with gold, divide it in 2 halves connect to E XYZ etc see if stress alters capilliarity.

21

Howell – flash with Bisulphide carbon then heat elec furnace tube

22

Dr Grothe make CP Carbon monosulphide, squirt carbonize, bring up in electric furnace tube.

23

Run down action hot linseed oil on bamboo fibs to make them elastic like rubber

24

Apply radium tube to pot with flower stalk see if in time it kills it or affects it like a human being

25

Grow a vine in a pot in dark and water it with chlorophyl juice from green plant. Use Peas.

26

Try effect of Radium on ants ditto X ray

27

Test in lab wireless with X ray Tube, or perfect Vac at end of atennae
Also Ultra violet light striking latter, see if increases sensitiveness

28

Wireless receiver Telephone with Tuning fork attached each diff Tune with damper on fork also resonator Tuned to right note,

29

Try aluminum condensor in atmosphere almost saturated with moisture, or Aluminum dry rectifier coated with paste of phos + Carbonate Soda and perhaps carb Stronlia -

30 = Tried - not good — May 1907

30

Emg strontia carbonate cylinder moistened with aluminate soda. ng

31

Sucburate of Tetraethylammoniumhydroxide to dissolve uric acid concretions form Urate of Tetraethyl and sucburate Lime.

32

Measure resistance of various magnetites natural and artificial and in various ways

33

Manganees alloys which are magnetic try and make by chemical precipitation ditto Chromium.

34

Dry Osmose Cell with porous partition, different gases on either side Light, heat, magnetism Elec X + Radium sound on one side to cause gas diffusion = to detect dif pressure use U tube filled with a liquid.

35

Of liquids water best conductor of heat The worst are certain Ethers Ethylene Bromide Amyl Iodide Ethyl Iodide

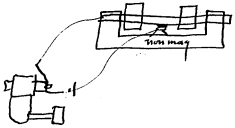
Tried this = 3 gal of Tetra put out 1 gal gasolene under any condition —

36

Tetrachloride of Carbon for use as a gasolene fire extinguisher in Garages – try experiment

37

4@6 inch rods ½" dia in powerful helix silver disk carbon forced into silver by hydraulic laid on end rods or thus



38

Thermo along Aluminum, Iron, and other bars, vibrators connected each Thermo or mirrow galvanometer = Now make an Arc at one end see how quick heat flows also try one end red hot & sudden quench

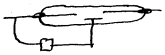
39 X

39

Think Edison effect will be shown on alternating arc by connecting P or N to a galvanometer and thence to polished plate held near arc so ultra violet light strikes it.

40

Probably same thing in vacuum tubes
X ray Tube



41

Probably the slides of crystals with black paper and laid on dry plate and exposed to sun that sun will cause some crystals to give a ray which will penetrate the paper and record – use 40 mesh screen over dry plate, also try with Electric and Hg Tube arcs –

42

Perhaps a short coil of wire like a sounder spool, Vibrator or key like old Etheric, powerful storage battery and wire ending in a sheet of metal held over slides, the slides being laid on grounded table produce flourescence of crystals are tuning forks of high rate

Possibly crystals laid on end iron bar and magnetized, the click may give high note

43

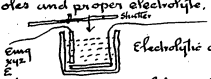
Flourescent crystals inside of a powerful helix, very low resistence, make and break X ray wheel, also Leyden jar.

44

Take a plant and connect a plate in soil, and battery and put tin foil around it. Use two plants, put current through each plant in different direction
Emg action on sap.

45

Should be able turn radiant light heat, Either into Elec or XYZ by use of metallic poles and proper electrolyte.



for detecting use revolving shutter, also use polarized light on electrodes one a radiator the other an absorber Also use gold vacous deposit, let light pass through

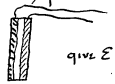
46

Possibly all rays except one rate vibration filtered out, or ultra red strike one pole ultra violet the other, possibly with iron receiving ultra violet it will oxidize use NiOH + Ni other pole, possibly Thermo of 2 Vacuous deposited metals, ultra violet pass through one, and red through the other All the above is likely to give XYZ hence try various receivers

48 = Tried May 1907 works ok — Citric acid test

47

Glass cell vacuous deposit one side, different metals, fluids inside, light shines through



give E X4Z

48

Try aluminum rectifier for Quad 4 cells Of in bridge, see if jumps on reversal if condenser around relay make it sluggish or use shunt. OK — lasts a week or more

49

Nickel strip with stearic acid over it → in 1½% KOH. with $N(OH)_3$ or not should give current as stearic acid dissolves it electrifies and can continuously discharge.

50

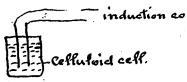
Instead of a grounded metallic circuit to try X4Z. use 10 cells storage battery in Multiple but with both poles of sheet zinck in $ZnSO_4$.

51

Possibly the Emq on account of its rapidity will show that a wave goes over wire before it changes the insulator, by alternating currents might send elec message by rapid alternations broken up into dots on uninsulated wires in the sea. possibly Aluminium rectifier 4 cells style - Try wireless this circuit.

52

Possibly wireless might work on the Atlantic cable, try this on artificial cable.

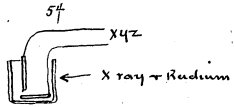


insulating liquid, see if XYZ ray comes out, · with gold leaf. photo plate and fluorescents Try Benzol etc.

53

See if X ray or radium is more or less absorbed by passing through liquids or solids when same are in a helix or electric stress, chilled, hot.

54



different metals for electrodes + different solutions

53—

Rays lower than heat but higher than sound possibly detected by very light moving parts of a high speed Emg using revolving shutter ray striking surface of the chalk in path of the pressure foot.

56

Also on a cell with electrolyte, ray shining on cathode or anode, or a current passing and depositing, say Zinc the ray shining on anode or cathode with shutter, possibly low inductance coil, with or without iron, possibly Aluminium rectifr wet or possibly dry possibly some metals give off a ray that will alter the friction.

57

XYZ cell. Iodine or Bromine dissolved in insulating liquids, different metals for electrodes = vibrator used, Emq XYZ receivers, possibly carbon form one electrode as its not attacked, might use Tetrachl. Carb Chloroform + liquids not attacked by Br or I.

58

Cylinder for Emq formed of Oxalate Lithia possibly alter friction by arc light.
Try cylinders other Fluorescents and phos. and see effect of light, X + radium + XYZ rays. Use shutter
Cypress Benzoates etc.

59

Try Edison effect on platinum, Tungsten, Tantalium lamps.

60

Howell flush filament with CS_2 treat Electric furnace

61

Squirt asphalt, treat with Sulphur so dont melt,

62

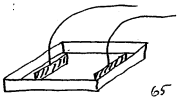
Silk thread dip in asphalt sulphurize many times and dip many times

63

Ramie single fibre, preluminarize then dip asphalt sulphurize reprelumin + re dip + so on. instead sulphurizing treat each time HNO_3 or hot hypochlorite Hypochlorious acid,

64

Humus dissolved in ammonia etc also humus deoxidized by hot SnCl. try NHy Sulfide



65

Pass powerful current thro liquid use thin sheet electrodes so get heat quickly Crystalize

66

In using Emg where the ray strikes the surface of the chalk cylinder always try high speed of rotation as effect may be very short, also use shutter

67

X4I receiver, capilliary tube Hg and another liquid, alterations at contact give signals.

68

Crystals while under fluorescence or phosphorescence, electrify—Magnetize pass light thro iodine in CS_2 also colored liquids

69

See if needle like crystals have any directive force Naphthochloronaphthalene

70

Emg with smooth crystals on point of pressure foot instead of metal.

71

XYZ Recvr Very thin bulb exhausted and 36 inch Capilliary with Hg in it.

72.

Ditto 2 Electrodes sealed in bulb capilliary Tube therefrom ray changes capilliary column

73

Electrify a platinum wire with loop at end on which is a salt giving a spectrum Try X + Radium.

74

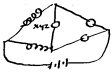
See if X ray of Radium alters Edison Effect.

75

See if drops of Bi Sul Carbon in water Column affected by E Mag X or Rad XYZ.

76

Emg galv ele balanced in bridge
Large voltage, 2 cells. X4Z ray ele
strikes one cell disturbs balance,



77

Try non electrolyte to wet chalk,
then try E X Rad + X4Z.

78

X4Z Receiver a wire dipping into
non-electrolyte with a drop of electrolyte at
its end.

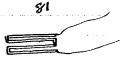
79

Ditto A capillary tube with electrolite and
immersed in non electrolite – ditto with
osmotic membrane over mouth of tube

80

Try fluorescent crystals immersed in
Electrolites and non electrolites

81



Lead and Aluminium doz couples. Let X or radium strike juncture – E + XYZ receivers

82

See if X or radium ionize – non-electrolites
use current high tension induction coil,
also use cathodes and anodes different metals

83

Flourescent crystals containing small admixture of iron salt, Then magnetize, vibrate X Rad

84

Opalescence in a tube by precipitated Sulphur – act on by all the rays + current.
try other opalescent Solutions,

85

Try X + Rad on fluorescent crysts in liquids which do not act on crystals, try different temperatures

86

Subject lead to very high temperature by an arc light, afterwards test for Silver
Keep arc on one hour
Ditto Manganese test for Cobalt
" Copper " Silver + platina
Iron + Sulphur " Gold.

87

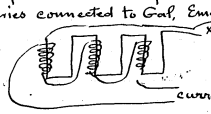
See if Line spectrum changed by subjecting glass prism to X ray Radium, Magnetism Electric sparks

88

See if beam light deflected from polished surface of many metals and alloys I had made in Electric furnace. when powerfully magnetized

89

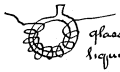
Sheet flake Ni Cu 60 layers in helix in series connected to Gal, Eng XYZ Revro



90

Work out experiments from analogy of a coil doing work on iron and giving a current opposite the energizing current, and a storage battery giving a current just the reverse

91



glass with helix, different liquids for induction

Alloy buttons made by arc have hole bored in and helix wound

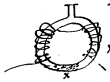
test for induction. look out some may take hours.

to change S

Keep in hour.

Try without hole in plain helix

Liquids –

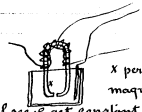


x fluorescent crystals

92

See if regular test cell storage battery is affected when in helix or strong field X or Radium use glass cell. also try light,

Not affected –



93

x permanently magnetized steel magnet, plate iron on it & with coil see if get constant inductive current due to accession of iron, use mirror galv.

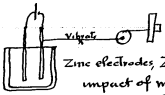
94

If magnetic self induction time is at the square of the length of the magnet or closed iron circuit then if one foot discharges in 1/100 of second a circuit 320 feet will take 16 minutes to discharge 4 hours if 1280 feet, use wire made up of strands prevent facults
If properly proportioned to work on best part of the saturation curve should give a good storage battery to float on Street RR Circuits where current only wanted for few minutes

95

this gives a kick

does this, what does it do
try Pi + other metals outside



Zinc electrodes, $ZnSO_4$ – impact of metallic ion

see if sound heard in Emq on Vibrating

97

Fluorescent crysts on back of Zn Electrode, both Zn electrode in $ZnSO_4$ – see if impact of metallic ion jars molecules. might fuse $CaWO_4$ to platinum + try

98 NO_4 is something

Fluorescent Cryst on face magnd, alternate

99

Iron when magnetized may be decomposed into two different kinds of iron molecule – or a compound molecule into 2 simpler molecules. if so dissolve iron strongly magnetized, in H_2SO_4 + other acids or Halogen and test quality of result.

100

In case of charging battery, work is done by raising potential of Fe + O. and current is given in opposite direction to primal current whereas with Fe current is in the same direction hence there is a <u>combination</u>. of something in charging and decomposition on discharging from simple to compound molecules probably. when magnetized the molecule is compound and more complex and this decomposes when current goes off. if the simple ion or molecules are charged like electrolytic ions This compounding should set free a charge which acting on the Aether opposite to the current or stored up as a stress in the Ether. perhaps by dissolving off highly magnetized Iron when the molecule is complex we shall get peculiar iron salts, say acting on iron in Ether with Bromine

101

As Fe salts are magnetic they should give different reactions when magnetized Magnetizn of iron pole of storage should affect the Voltage.

102

Try the dissolving times of section closed iron ring powerfully magnetized + not magtzd

103.

Put Emg in circuit where plating and decomposition taking place. also in secondary coil in primary coil of which decompstn + plateing going on to see character of sounds

104

To detect waves higher than sound waves that can be heard by ear fasten to diaphm of Emg pocket of flourescent cryst also a thermo couple and a wire from diaphm rubbing on its junctiue use mirror galv also wire rubbing on chalk to generate current, Control sensitive flame.

105

Translucent + clear cylinder
Ray shines through cylinder + alters friction

106

X iron cylinder helix magnetizg. pens with various metals

107

Use Tetrachloride Carbon Aq Hg Pb electrodes high voltage current see if Halogen combines with the metals, intermit the voltage, heat.

108

A magnet is sensitive to jars use a telephone let X ray. Radium, XYZ strike end, use regular coil also coil with only few turns, connect to Emg or XYZ instruments or Gal This should turn sound and vibrations lower than heat into E. permanent mag for quickness should be formed bundle very fine steel wires hardened and magnetized

109

Diaphram, chamber and listening tubes or recording monometer over artesian well at Ft Myers for earthquake records Moons attraction

110

Cylinder of solid Potassium Silicate for Emg

NG

111

See if scintillations of different metals are deflected by magnet, or condenser disch^g see if take place in non-electrolites

112

See if iron wire circuit including a Emg and surrounded by helix cause click to give current, try XYZ receivers use vibrator and sharp wave

113

See if old etheric spark given off by cores of dynamos.

114

See if old Etheric with Aluminium Rect^r affects Emg.

115

Use 4 way bridge Al Rect with Emg for wireless.

116

Wet Carb Strontia cylinder on Emg with Caustic Strontia water this will absorb CO_2 and make pores finer and increase sensitiveness after being Carbonized use KOH, NaOH LiOH, CsOH RbOH, Try K_2CO_3 Li_2CO_3 Aluminate Soda.

116 Dont work any better than Reg KOH see notes in Reg Emg book May 20 1907

117

Aluminum cylinder coated in cell heavily with Al_2O_3 by current for Emq

118

Cocaine, Aconite, seems to stop transmission of pain along the nerves if the effect is electrical then Cocaine should show some electrical phenomena, or be the means of insulating "nervous force" possibly put in KOH in battery it would show something

119

Will Cocaine affect a sensitive plant Venus fly trap

120

Will Cocaine affect the nerves at a distance if in mass and prolonged time will effect pass thru matter.

121

Try Radium on Cocaine cryst to force into hand
also electro osmose ~

122

Watch glass paraffined, drop water, two platina wire electrodes - dust on surface, also opal by precip sulphur, X Y Z receiver also other rays. . Glycerine surface + drop non-electrolite

123

Glass tube, particles floating in liquid, see if AC or DC cause rotation of liquid - also magnetic oxide in suspension - Opal, $Fe_2O_3 OH$,

124

Vacuous deposit Nickel so Transparent, put in Helix see if affects amount of light

125

Make Vacuous deposits many metals pass beam light thro, + use helix, also subject it to Rad + X ray. see if X or Rad throw current, or X Y Z into helix;
make some thus closed ring wind

so can have helix thru hole

126

See if Aluminium wire will act as Relay in sea water – if so bare wire cable feighy possible.

127

See if hydraulicly pressed 1" cube Cocoaine effect a sensitive surface at a distance, or through thin celluloid,

128

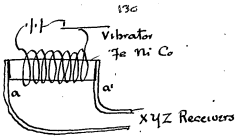
See how long a 1/4 iron wire 25 feet long plated with Copper 1/64 inch thick will retain its magnetism, wind one layer wire onto charge it,

129

When work is done on a magnet (18) energy stored up, where does it go to when the helix circuit is opened?

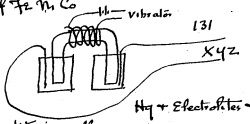
Think it goes off as ether – vide old Experiment,

130

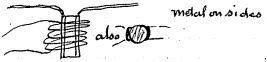


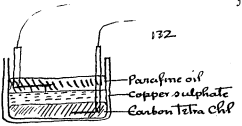
Metallic circuit a a' same and different metals, leading wires of same metal + different metals = some cases plate the same metals both end or one metal one end another metal opposite end other cases connect mechanically - some cases use core made up of many wires of Fe Ni Co

also

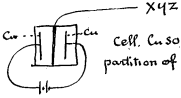


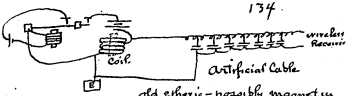
non electrolites in cells - some cases connect to iron direct on one pole but use cell on other vary metals in cell. also plate ends iron dif metals



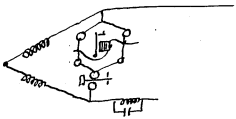


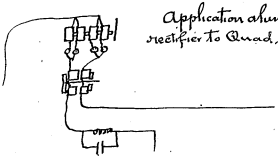
Send heavy charge through, should act as condenser and send a current through Cu. Sulphate and deposit metal which should sink thru the Tetrachloride.





old etheric - possibly magnet in helix -





Application aluminum rectifier to Quad.

Wk fine

A condenser may store its charge not by setting up a stress but is electrolytic like compound or complexes are formed in which absorb energy on discharge return to normal, Colloids are generally used & have high so-called electrolytic capacity it may be the action of the current is towards forming crystalization towards & this is known to alter the energy.

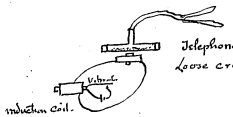
136

On page 33 is shown magnets for experiments under theory that free iron molecules under magnetism combine to form compound molecule - an non electrolite so to speak. Vary it by using many diferent metals instead of iron in the way mentioned also alloys -

137

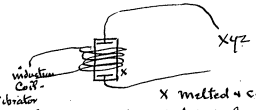
See if scintillation are deflected by a magnet also if changed when helix with current around them - also scintilate by condr discharge from rod dif metals surrounded by a helix -

135



Telephone cha listening tubes
Loose crystals,

139



X melted + coat salts
with immersed metalic pole, make
Each pole same also different metals

140

Find out what it is that phosphoresces in
Edison on by heat. when get a supply
see if phosphorescence continuous as
long as heat applied, then see if phos
by alternating Electrical stresses,

141

Make some large crystals of complex Crystal say those crystalizing in Magnesium system, also a number of other compound Crystals $7H_2O$ + also anhydrous, test them in various ways.

142

Make a number of rods ½ by 3 of fused salts also alloys of dif fused salts, Inorganic + organic and mixed for Experiments.

143

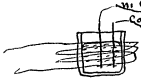
Continuation of Exp'nts p 33. make amalgams of Fe Ni Co other metals put them in test tube in helix. insert Electrodes in the liquid amalgam same as in a battery. Change helix BC or AC - use all receivers XYZ etc.
The liquid Hg probably give mobility to Complex iron molecules - possibly one kind iron molecule be found one pole + another at other pole.

144

Might try compound amalgams such as Silver and Zinc.

possibly deposit on poles take place. - possibly simplex & complex Fe ions differentiate

Cu Fe not amalgamated



145

X-42

146

Try induction kick

Hg amalgam of metals and alloys - glass ring tube.

Experiments with slides containing crystals

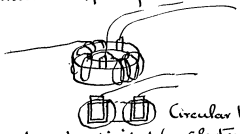
Put in dry plate with removeable slide over it very thin aluminum. Then slide, then the cover Keep slide in between dry plate and crystals but take off cover and expose to arc etc now put on cover + pull slide between dry plate + crystals, hold 5 minutes then put in another dry plate + give 5 minutes + so on until no photo effect given – This will give relative duration of phos = There is very little doubt but that some crystals will phos so high in Ultra violet as to be invisible to eye and this will bring them out

148

Etheric XYZ sources. fuse inorganic salts in platinum, porcelain nickel capsule or crucible – use different electrodes use base salt + add other salts soluable in fused salt, use vibrator XYZ Receivers – also on cooling down

149

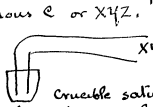
Continuation expmts p 33



Circular trough

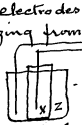
Hg amalgams - divided by electrodes (10) dip in - energized by coil wire - might have a secondary wire see if Continuous C or XYZ.

150



Crucible saturated solutions different electrodes see if C + XYZ on Crystalizing from hot solution.

151



Saturated solutions hot X porous pot with acid salt or neutral Z alkaline salt, also both neutral, crystz in same & opp systems different electrodes & both same.

152

See if absorption spectrum is altered by Electric + magnetic stresses hot and cold by X Rad

---

153

Several small porcelain Crucible all heated together with saturated hot solutions of soluable salt, organic + inorganic - place of the whole very thin sheet aluminum and a dry plate on 20 mesh screen. see if XYZ ray comes out on crystalizing

---

154

Cell with different electrodes and solutions
½ cell + one electrode guarded by heavy sheet lead from X ray Shutter = XYZ Emg + E Receivers.

155

Nickel hydroxide is ionized according to Ostwald as it shows green nickel ion – try magnetic and electric stress to change color.

156

See if Nickel peroxide, hydrated and anhydrous is magnetic ditto Co.

157

Ralph Abroquat precipitate 4 oz lots $Ni(OH)_2$ with 10% of each kind of metal possible ie + ous salts – ½ wash not filtered, dried low heat.

158

Also lot from Chloride + Nitrate ½ Wash not filtered dried low heat.

159

Crystalize Organic hot liquids under Electric stress of 125 volts or higher also try Alternating.

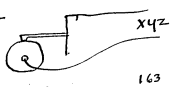
160

Crystalize Organic + inorganic salts which are colored in the dark, dry + see quantity color, also under arc Carbon + Hg –

161

In telephone diaphragm connected to tuning fork work phone by induction coil whose inductance is in time with vibration period of fork.

162



XYZ ε εTε Eng

163

Iron cylinder polished - pressure foot iron vary with all kinds metals, both cylinders and presser rotate several hundred times min. also magnetized

164

Dry storage - flat Nickel sheet, paste .005 thick green hydroxide Ni moistened 10% KOH. Ni plate coated plate regular iron moistened 10% KOH. sheet tissue paper between.

165

Melt some Aluminum by Current in Vacuum get present of unmelted residue - ~~[illegible]~~ quality of metal analyze ~~[illegible]~~

166

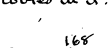
See if oxides having same specific grav as Aluminium will alloy with it – also other compounds.

167

Drop water on paraffined watch glass two platina wires in it. X4Z Rays

168

Find if Marshall the Condenser maker makes artificial Cables, Yes ordered



169

170

Wet Eng cylinders with plating solution using anhydrous oxides etc for cylinders. so solution has no chemical reaction by DC+AC – induction coil also.

171

Plating cell with porous cup soaked with solutions & then precipitating in the pores, say ferrocyn Cu & others. Then deposit Copper on the walls of porous cup. will lead to something.

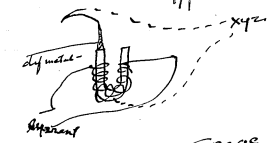
172

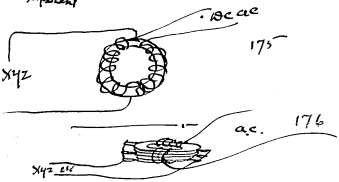
Make an insulator which has metalic iron Reduced by Hydrogen in it. so the static & magnetic oppose & neutralize this diaelectric should be good for Cables Telephones. A spiraly wound iron wire over the insulation should answer.

173

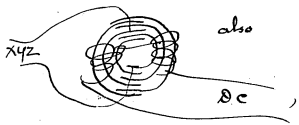
Closed ring with few turns wire, in bridge to determine Kick Then put whole in oil & determine then subject whole to hydraulic pressure and determine. think under great pressure Iron will not hag & will do more converting work.

174

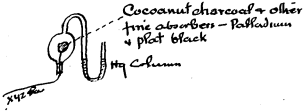




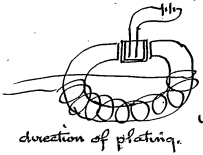
Disks hole in center of Iron. iron 003 thick
parafined paper between build up 50
sections



177



178



See if an variation of voltage according to

179

X Ray break wheel and little Etheric coil, just break, wind coil in Vacuum.

180

Get good supply Rare metals, those cannot get reduce in Elec furnace or make alloys.

181

Try Emq with the pen faced with a very thin non conductor like Mica, use a highly polished metal cylinder, use all metals that cylinders can be made up and try all kinds diaelectrics + sections of crystals that can be got thin with every metal, Use coil.

182.

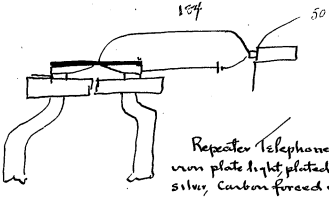
X a diaphm forced in against lugs of closed ring –

Theory is iron expands + contracts on magnetizm + will throw dia into vibration

183

Run a series of experiments on Magnesium electrodes for plating upon in KOH NaOH LiOH, + generally – investigate the phenomena of it plates through the oxide – Oxidize it thick by Current + then plate – See if MgO Can be plated on metals to form films.

184



Repeater Telephone
iron plate light plated
silver, Carbon forced in

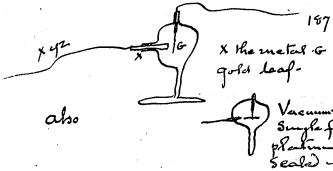
185

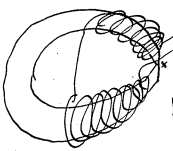
Try Jungolin bronzes in Telephone
ditto as thermo couple with other metals

186

As there are no means of detecting slow
or long waves. possibly the observation
that high note tuning forks attract can
be used as XYZ Receiver

187

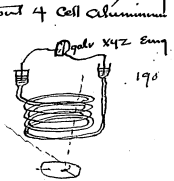




Ray strike at X alter the magnet lines — possible wants an air space 1/1000 inch — also

187

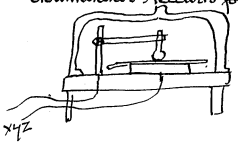
wire fit in gas over which X4Z vibrations coming — also only few turns wire a — X4Z receivers in wire circuit Eng — with and without 4 cell aluminum rectifiers,



188

glass tube spiral Zinc electrodes, $ZnSO_4$ move lines of X ray to cut spiral, try light, Mag.

Accumulative receivers for XYZ

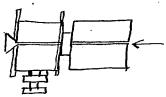


Use ball about 1/8 @ 1/4 dia resting on sensitive paper.
for alternating Use a paper which is sensitive for both waves, also use other sensitized paper dry or not depending on a current.

Iodide Pot starch Platina ball
Nitrate Manganese "
paste of $Ni(OH)_2$ on "
paper moistened KOH "
Ditto Cobalt Hydrox "
phenol Phthalein with neutral "
K or Alkine salt, "
Analine Hydrochloride
Blue print paper.
Chloride Cobalt paper

Vanadium salts — Platina Gall
Uranium salts, — "
Molybdenum · Organic mat — "
Tungsten — "
Tellurium Gall,
Chloride ferrous — Plat Gall.
Halle ☉ further list in big book.

192



Beam of light passed through long slit about .0001 wide thence through solutions and Crystals + other matter - observe beam direct with eye, or use a spectroscope subject the solutions or crystals etc to helix DC AC — Electric Stress continuous and alternating - also heat Light X Rad X Y Z adjust slits parabolic + Cause some forces to deflect or alter spectrum or absorption if can find anything it is sensitive to use it for a receiver.

193

Make a cell about size of a 4X3 Dry plate, use celluloid sides, also glass, mica – make it narrow say 1/2 inch (12) thick so it can be used in a Camera

also anodes of many platinum wire or other metal when plating solutions are to be used

put plate in camera and use carbon electrodes and NaCl. put on very weak current to form chloride on Ag plate, at same time light reduces it, wash & develope reg way also have gelatin dissolved in solution.

Try NaBr NaI NaI NaCl, + various combinations – CuPlate

With this apparatus and fine gauze or screen as anode a vast number of Experiments can be made with all salts sensitive to light, + heat,

Possibly there are many metals which will have their surface altered by light, either as a plate of when 000001 thickness is plated on

194

Possibly with Quartz lense & using Ultra violet light many phenomena arise

195

Perhaps polished plate with image focused on by Quartz lense and plate connected with silent discharge of low voltage that the Ultra will start glow on bright parts & not on duller,

196

Try Spectrum on metal plated films

197

Also on plate in presence of Chlorine & Quartz lense images #

198

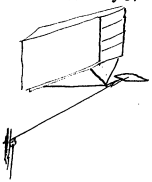
Can probably dispense with Lenses & use the pin hole method

199

There is little doubt that reasons why amplificating phono records by leverage is in the bending of the lever due to inertia & elasticity

200

Aerial naught revolving pole, wires with cigar shaped lead at end, reel to let wires out and box kite end each wire - 3 or 4 section box.



201

Fluor Spar Apatite, Become phosphorescent by heat, this is gradually lost, is restored by subjecting to induction Coil spark — Hence arrange Fluor Spar under Continuous Elec stress and heat for constance Phos Lamp —

202

Try slow dehydration of good crystals in hot Castor, glycerine when not sol. Chl Calcium Linseed oil - under Hg. Stearic acid Parafine,

203

Try slow dehydration and reduction in Hydrogen of unmeltable crystals

204

Fuse Cupric Sulphate with K + Na Sulphates, oxidize Cu for Lelande. also reduce by Hydrogen, make into plate and then oxidize for Lelande

205

In making non-pyro iron from crystals that is hard to prevent from catching fire, or cant be prevented, let in Conc KOH, also NH_4 - also Hydrocarbons CO, N.

206

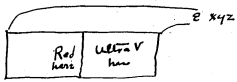
See page 55 - plate coated with $Ni(OH)_2$ and peroxidized, and then put in cell the light ought to reduce perox to mon ox + give picture, perhaps dry plate could be made with fine mush of Ni_2O_3 mixed with cold gelatin + put on plate + dried then light in conjunction with the organic matter would reduce the perox as its endothermic, a little heat might assist, Perhaps radiant infra red might act on it, if its reducing.

207

Ultra Violet is reducing I find by looking up "light" in Watts and Red is oxidizg

208

possibly a thermopile worked by light possible



209

Various metals in solution one pole receiving Violet the other red—

possibly by alternating the light by a shutter

210

and with proper metal electrodes and electrolite, with Aluminum rectifier. Sunlight might be utilized Commercially or Alternating Ct motor.

211

Possibly cells could be made with same Electrodes but divided cell, or dif electrodes in each side of cell a different solution and light rays sent through one only or both, or Violet thru one red thru the other giving E or XYZ.

212

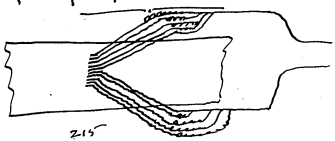
Determine the amount of frothing in 9·11 13 up to 33% KOH ditto NaOH. ditto KOH with a constant of 2 gms LiOH. ditto NaOH, also KOH from Sulfate also NaOH from Sulfate a metal.

213

High speed cutting tools - powerfully magnetize them see if harder

214

See if strong magnetism hardens soft iron



215

To record alternating waves on chemical paper, more + more Reo in pens as they recede from the center, O pens on one side H pens on other

216

Greenly make some Nickel flake 1/4 thick .000025. to be used for coating $Ni(OH)_2$ then used with regular flake.

217

Heat copper wire .001 dia with Carbon then eat out copper by our flake solution, continuous movement in solution - Then when free Cu, bring up to graphitizing point in electric furnace Nickel or iron wire, then brot up red in chlorine, volatilize Fe or Ni

218

I have idea that the less the fall of voltage per inch of length of any filament the higher the temp it can be worked at, by flashing Copper wires very fine, graphitized carbon could be made 2 or 3 times the present length with same radiating surface and get very high economy.

219

See if viscosity of various solutions through various tubes altered by X, Rad, & Mag Light, XYZ

220

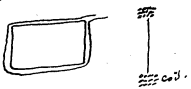
Ions are probably coming off of all matter continuously, probably accelerated by Heat, Light, Elec Mag X &c
Accumulate ions on moist paper having the best color reagents for the material used. Pass X ray thru metals (thin) & catch ions torn off into reaction solutions or paper.

221

Filaments of Conducting powders with nonfusible powders, Use induction coil + Condensers. Low voltage

222

Page 55 slide polished iron sheet surrounded with Coil.



223

powerfully magnetized see if picture can be developed after magnetism off by vapors of acids Alkalis gases or dry powders etc.

224

Nickel disk also other metals which do not amalgamate with Mercury - immersed therein and connected to diaphm. relative Hg - pass currents thru also XYZ Receiver

225

Aluminium rectifier with plating solution to diminish gas rque economy

226

Aluminium plate polished and coated with oxide electrolytically use in p 55 also dipped in solutions

227

Aluminum oxidized, use as cathode to plate on for easy stripping

228

p 55 polished plate possibly oxidized to black in saturated cold solution Lime water Light causes rise of temp at surface diminution of sol + deposit of Lime. Could develope with phenolphthalein etc $CaSO_4$ does same

229

Try Geissler Tube with induction coil Current thru Alumn Rectfr.

230

p 55 Silver plate coated AgCl Br or I Hydrogen in cell want see if can get rid animal matter

231

Copper plate Acetylene gas in cell. light causes form C_2H_2 cuprid -

232

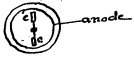
Collodion silver solution in presence Hydrogen to get rid animal matter possibly water must be present.

233

Copper plate dry H_2S. Light causes decomposition

234

Electrolytic gas motor



Vanes insulated on opposite sides, evolved hydrogen cause rotation.

235

Mercury - Lead + other anodes immersed therein, iron nickel, cobalt, Aluminium + magnesium electrodes for cathode dissolve lead or other metals in Hg (IC) metal same as anode - also, Carbon, Pt electrode for anode K or Na Li dissolved in Hg see if plating or other phenom occurs — perhaps Alumin rectifier action Also Molten fusible metal with above instead Hg -
Also Lead Tin Sb_2 Bi + other low fusing metals to form definite alloys; see if plating take place - ditto under magnetic lines parallel + right angles

236

D'Arcets alloy when amalgamtd melts 45° Cent use for making casts insects Try disk record -
1 pt Pb 1 Sn 2 Bi 10 Hg 1st 3
fused together then Hg added -

Fusible alloys	Pb	Bi	Sn	MP
Hemley	1	1	1	127° C
Rose	1	2	1	94
Newton	5	8	3	95

all solidify 98° C

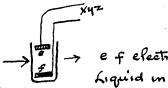
See 193= Oxide Pb + Ag obtained by adding KOH to Sol of a Pb salt mixed with Ag salt. Yellow precip insol in excess. Excess of KOH dis the PbO out, easily blackens by light make plate of it - also try it in gelatin Also see sensitiveness for X ray etc. PbO_2 reduced to red or by light

237

Adularia struck with a hammer so as to split it, emit at each crack, a light which may last for several minutes and when ground in a mortar appears all on fire

238

Wireless receiver



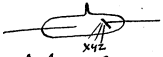
239

e f electrodes dif metals
Liquid in cell absorb X-heat
light, Rad mag- rays absorbed. those absorbed
may pass over electrodes in some form
use shutter

240

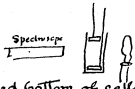
X ray tube paste
or secure metals
and salts so ray passes thru - carries
particles to chem reaction plate xy

241



X ray: tube filled with insulating liquids
Exhausted of air see if any ray comes off

242



Cell filled with an electrolite notice concentration at top and bottom of cells by action of current. Ditto the formation of new compounds by oxidation and reduction which will give new absorption spectrum.

243

Notice on water last night that the moon itself after looking at it for ½ minute then close eyes gave no image on the eye but strange to say the reflected light from the water gave strong persistence image, cant the light polarized possibly better photos of weak lighted objects like the moon could be taken by reflection instead of direct.

244

Tube blackened inside 2 beams light right angles - elec + mag fie to affect the liquid
Try spec also shutter - beams X + Rad
X+Z Dif liquids

245

By delicate thermo pile + galv see if phos crystals are higher than temp of the atmosphere

246

Solid Willimite thin foil each side X - Rad Light arc, Hg see if charged foil

247

Foil coated with ignited precipitated Calcium Tungstate Try X + Rad see if charges foil Try Oxalate Lithia with Arc + Hg arc Ditto Balmain

248

Kinetoscope = saturate cloth upon which picture projected with Oxalate Lithia - Try Balmain also this ought to steady result

249

If particles are thrown off end of a wire at any voltage then form salts on polished end of a wire and absorb the projected molecules in reagents giving color - might try intermitting the current + [illegible]

250

In chemical recording points on paper try all metals with dif solutions anode and cathode & develope record with proper reagents giving colored compound. There may be latent images formed

251

wrong for phonofunnel should not parallel the waves -

should be thus

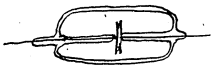
252

try funnel covered over with thin membrane loose - funnel filled with Telurchloride Carbon -

253

try recorder filled with lycopodium

254



X ray tube, 2 plat disks seperated by mica ring .0001 thick – try for phenom.

255

Perhaps there are unknown rays coming from Space or the Ether from some direction Use XYZ Receiver, connect to plates various kinds, move in all directions Use shutters

256

Put up recording instruments at Edison record varying magnetism or body Rapid oscillations, Surround with several layers wire,

257

Get good gold leaf electrometer for Radium

258

Possibly some crystals subjected to intermittent impulse different known rays or stresses will emit XYZ rays —

259

Reduce some CP Tungsten Oxide to metal by H at a white heat Then use it to flash W on Carbon filments by Vacuo process or on asphalt filments, dissolve out asphalt.

260

Measure elec conductivity, expansion by heat, Conductly ditto, Thermo elec Capacity Absorption X ray for deposited metals Electrically

261

In Vacuo use arc + have crater in pole + volatilize different substances to form sheets + Coat walls. possibly make Mica —

262

Perhaps a powerful Voltage ~~with~~ by Condenser discharge into an open Circuit without a current by use of break wheel + discharge at each impulse will throw off from ends of wire molecules, atoms off or ions making luminous Andularia, Elec Calamine, Willimite $CaWO_4$ - $PtBaCy$ Etc.

263

See if ionizing of semi conducting solution is increased by any ord rays or stress singly or in combination,

264

Turning phon cylinders, wax electrifies probably one kind wax make P another kind Negative of two kinds turned off in an electrolite with proper metals for turning tools in say a plating solution would it give current

265

Put motor in vacuum with cylinder of gun cotton + a rubber pressing against it or wheel. Ionize with radium will we get a discharge and light.

266

Cut square off the end of a conifer or Camphor tree limb - cap it partially with an electrode, bury the other pole in earth, Connect battery + cause sap to flow continuously by Osmosis.

267

Ditto instead of electrodes connect glass bottle to end of limb by close fit rubber tube, establish a vacuum + draw sap out of tree by this means

If roots manufacture it, could make them work extra to supply the extra, like a cow whose calf is dead, probably with plenty water and plant food yield could be made enormous. Certainly a tree is more stupid than a cow.

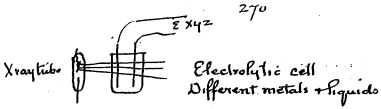
268

Throw acetate of lime or other lime salt solution (which on decompstn by heat swells up and leaves porous lime) upon red hot coals in grate fire to increase radiation & more economical utilization of heat of combustion.

269

Metallic Tungsten for the impact plate of X ray tube, instead of Pt, cant melt it.

270



271

See if magnetic ring, single coil layer gives greater kick in Vacuo (Xray degree) than in air also try it in perfect insulating liquids — also in dark in these liquids for phenom.

272

Calculate out resistence of metals per pound when in form wire — also atomic + Molecular weight, Electrolytic series and other constants.

273

Form a 3 or four in dia ring 1/2 inch dia formed of continuously insulated iron wire — around this wind several layers insulated copper wire — Now measure resistance of the iron wire — magnetized + not mag. Try non magnetic metals as well. also electrolites plating solutions dif electrodes dividing ring

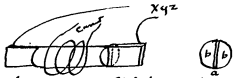
274

Try all iron salts - double salts between poles of 1/4 to 1/2 inch dia ring of permanently magnet. surrounded with a coil thru which alternated sharp front waves pass so as to shake the iron molecule + set up fluorescence or phos.

275

Also try the iron salts in a coil where Leyden jar or wireless discharges pass

276



bb is a regular iron core split in two with a sheet of metal a in between. core surrounded with a coil – DC + alternating + Leyden charges sent

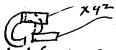
277

Another form.

Core hollow but split in two halfs

278

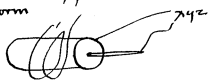
Another form.



In 2 halfs but insulated by air space

279

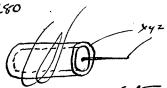
Another form



outside of iron core coated metal, central metal

280

Another form



Metallic shell over core w space between Central rod.

281

If ions of metals are projected in direction of the flow of the current, then interpolate a disk of Ag + Fe facing each other & scraped to a fit, continue the current for many hours + then test the Ag for Fe and Fe for Ag chemically + by spectroscope Try dif metals and high voltage — Leydon

282

See if get Edison effect in an X ray quality of vacuum. If so then a battery current should pass continuously between electrodes, where the P had ultra violet light thrown on it to break down the surface compounds of the electrodes will have to use quartz window. It is this gas layer that is stressed to a contrary voltage equal to impressed voltage that prevents passage of a continuous current thru the ether

243

Perhaps iron can be taken out of tubes or old flat pocket plates by ether alcohol or acetone in which is dissolved HCl gas or acetic, FeCl bring soluable NiCl is not should combn take place with Ni it could be reduced again by Kott.

284

See if a Gladstone Copper Zink couple is magnetic alone, then put in helix, try Kick on Galv. If old theory that a magnet due to innumerable short circuits the Cu Zn Couple has millions + helix ought to position them.

285

Pd Hg Ag Kim

Copper has greatest affinity for Sulphur Mn the least, an alloy of these might have some interesting characteristics. Thallium next [illegible] Zn — [illegible] properties.

286

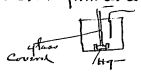
To get data for new electrolite theory use Raulrausche method measuring Res + test no of electrolites which have abnormal solubility curves.

287

Make table of potential gradients of all combustables calling Mg or Ca which is highest 100 — to Zero calling O Zero.

288

Will small surface anode of Hg in KOH act thru Oxide film as a Rectifier



289

Perhaps Nitrides of the non magnetic metals might become magnet in helix sheets of metal hot NH3 passed. Sheets coiled up to form cylinder Also magnetic metals Nitrided might show some phenom.

290

In Vac tube for X ray use iron rod for impact and highly magnetize

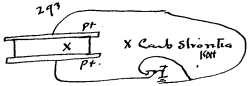
291

In Edison effect tube use central wire of iron highly magnetized possibly magnetized iron is not polarized in Vacuo + connects with the Ether

292

If magnetism is a question of good contact with the ether then other metals in a helix upon which ultra violet light strikes should get magnetic

293



See direction of current in opening

294

Little Etheric coil No 12 wire stranded of No 36 wire and wound 1/4 inch hole to 1½ dia 1/4 inch wide. Put in vacuum equal to X ray. insulate by air space between each coil by bits dialectric. Use revolving break, heavy amperes. air blown spark for Etheric XYZ also with iron in coil made of fine iron wires—

Chemical recording – Wet paper with Potassium Chloride for iron pen. as anode, Develope with FerricyK HS $HSNH_4$

With Cobalt pen use FerricyK AmonSulp Hypochlorite of Na

With Copper pen Use HS, Hypochlorite ferrocy or ferri

With Lead pen as anode HS Hypochlorite Na as cathode see if hydride, Use "

Bismuth pen. as anode. develope by reduction electrolytically.

Arsenic pen HS – when anode, when cathode metal – when anode reduce Electrolytly by current

Silver pen anode, use organic matter + light use paper with Iodide K BrK.

Possibly paper soaked in Co + also Ni Sulphates dried then put in KOH precip the $Co(OH)_2$ in pores and surface of paper washing well then moistening with KOH, will give Co_2O_3 Very black sensitive and permanent.

Neutral K Salt develope by pyrogallic acid cathodic

296

Ferrous silicate powerfully magnetized ought to show some phenomenon with light etc

297

X Bundle copper wires cut lines of force by X wires use other metals than Copper

298

Possibly there are stress lines between Zn and the Oxidizers were moving in + out qwz XYZ. E.

299

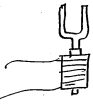
Put bar of iron helix strong current see which end Cools fastest. ditto heat Center long bar see which end heat reaches first, + rises to 200.

300

See if elasticity of iron is diminished by magnetizing in form of a tuning fork

This would probably dampen it.

Try thus



301

Flashing arcs at end of wireless antenae should on account of Ultra violet waves permit of a better contact with the Ether, by breaking down the dielectric polarization at surface of the points, think that is reason why get better results daytime, Light could be few inches from it or arc itself act as point, Possibly Mercury arc in Quartz Case be best,

302

Polarization of battery electrodes should be stopped or changed by Ultra violet light shining on electrodes,

303

Resistance of iron wires should increase on magnetizing to saturation as magnetizm may cause formation iron compounds between its own ions

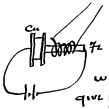
304

Resistance of metals are functions of the free ions and combined ions Al Cu Ag wires have their ions free Whereas Zn zic part are free & part combined with themselves to form Complexes Many such complexes are stable In iron some are free some combined while some of the free ions under Electric stress combine with great facility Al does not hence magnetic power of Iron ? Mn has some free ions which in presence of Sb ions combine with great ease to form Complexes. under electric stress hence magnetic, This theory very fanciful—

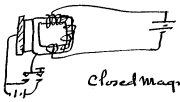
305

Perhaps X Ray would appear at a lower stage of Vacuum if Ultra Violet light through a Quartz window would be thrown on the Electrode,

306



See if condensor with magnetized pole. give phenom or no capacity



Closed Magnet.

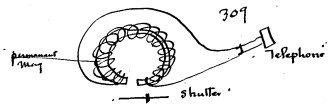
N. Fe Storage 307

See if vion lines discoverable in spectroscope |

308

Little Etheric coil in Vac – probably give with powerful current, which break sufficient capacity to work an X Ray tube

309



310

Ultra violet light strikes end of permanent mag see if disturbs magnetism so shutter action heard in Telephone

Also soft iron magnet with cell + secondary with Telephone in. If there is polarization at surface of the iron its breaking down by Ultra waves should increase magnetism

311

2 Balls in a Vacuum. one aluminum the other lead.– delicately hung one ball shielded from light Use burning glass from lense focus heat on Al. it should be repulsed by the lead. A Coloumb in Vacuo X ray stage ought show pots results with balls of different materials + Rays

382

Can it be that a high temperature world repels in the ether of space low temperature worlds. The Sun repelling the Earth and the Earth repelling against a still lower temperature worlds, between the two now in Equilibrium. The eccentric orbit being due to variation of temp in space. The Center of the Earth is hot, outside surface not so hot result repulsion but sun also repulses - At center of the Earth no repulsion. between it + sun if both are same temp, but outside shell of earth is cool hence is repulsed - therefore Gravity - Every piece of matter Emitting Ether waves say of 100 Energy Repels a body sending out waves of Energy less than 100, hence gravity

of fanciful

313

If a helix stresses on condenser P end of magnet the other end ought not to be compressed. possibly if measured one end would be less dia than the other possibly Ether waves from wire striking iron repulses atoms and thus produces compression & elongation On rings with air gap & only compression on closed rings & this would account for greater work done & given out on closed rings

314

A closed ring immersed in a liquid with sensitive index should show contraction Open gas rings wouldnt except with Extremely sensitive index If this is so the kick or converting capacity of a closed ring should increase by pressure possibly alternations of pressure would generate Currents in the helix around it Could use Explosion in a closed cylinder Containing the ring

315

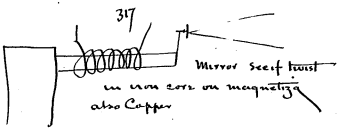
All on the supposition that ether waves or high temperature repulses low temp bodies in the C P Ether. If a body has low specific heat so little internal

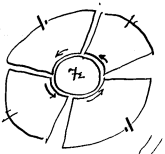
work can be done the repulsion + apparent gravity or weight will be greater, probable reason why bodies low specific heat are generally heavy

316

Chem pure iron, Coat glass plates by Vacuum deposit, also plates so closed ring can be used - should get some good phenom — also Mn Cr Co Ni —
Can get these metals CP from oxides + reduce by H, press into cakes with wire inside marked by glass tube,

317





318

Will iron become magnetic

This is same thing S

319

The most perfect way to measure para diamagnetic Godio is to make rings suspended in Vacuo equal to X ray Vac put 1 or more turns of platinum carrying 3 or more ampere, Balance Res in Bridge & get Kick There will be no diaelectric matter to interfere

320

If Ultra violet light is absorbed by say Mica will it not be deflected or rather reflected very greatly while the other rays pass this would be good way free Ultra of the other waves Find the substance which absorbs Ultra Great & Sets others thru Great & use it for reflector perhaps altered by 2 mag X Rad might alter its reflecting surface

321

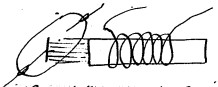
Will a Bismuth ring in Vacuo swing
Turn give a Kick opposite to iron

322

Experiment with Bismuth alloys to
get them more Diamagnetic as iron has
been improved by Silicon

323

If tendency of current around iron to
form endothermic iron aggregates and
absorb energy + Diacholtrics tend to
decompose as Exothermic aggregates
Then possibly Peroxide of Nickel being
Endothermic + a conductor of E
w. magnetic in helix Perhaps
Endothermic diacholtrics might give
interesting results in helix and in
Condensers Ba + Earth Metal peroxides
Acetylide Cu Ag and other Explosives



324

X Ray striking end of iron should give
E in wire and magnetize hardened
Steel, Might use lead shutter + Telephone

325

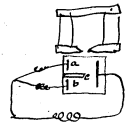
See if alternating magnetic field from poles affect the fluorescing power of crystals
Try the slides in field, with Arc Hg Arc X + Reg light and lightwaves screened off only Ultra red— also in steady magnetic field - also in Wire only field Wheel break— also between condenser plate pump spark point nearly — also slides hot + cold. Also Test not in Mag field but in Electric stress field like a diachetric steady high voltage 1000 Volts.

326

I should have 1000 test cells made up to get high voltage with some current for Experiments Long Tubes 2 Tubes 4 Fe-

327

Try different non conds (18) diachetric rapidly alternated by wireless stress + try if diachetric gives off a ray effecting slides or photo plate.
Ditto metals in a helix with wireless ~~=~~ bunsle wires so no Focaults.



328

Rubber cell Zinc KOH, CuO a is CuO
Electrode b the same exactly equal.
c a rubber partition, now close circuit
move c so current equal both CuO
or vary res in the branches, Now when
Current steady. energize the magnet &
see if ions are deflected to raise current
in a –

329

Put water and other non conducting liquids
in jar. put in electrodes different metals Pt & Zn Sb
Keeping Pt constant & vary the other metals
then use another metal say Al for constant &
vary other metals Use rather high Voltage
now stress Liquid with X Rad Ray Ultra
Hg Monochromatic Light – also when liquid
heated, Also concentrate stress on
one then the other Electrode, then on
liquid only – try phos & fluorescent light
also

If so Oxytube Lillie & Knuckel phenomena

330

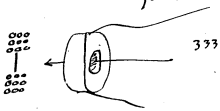
X ray may be short periods of Ultra violet rate of vibration each period only having a few vibrations, (10) Ultra light intermitted — The time which each section Exists is to short for matter to reach a permanent state so as to show ordinary Effects — The first part or appearance of ordinary Ultra probably passes through matter + acts just like X ray but as there are only one series pass and then matter sets up conditions whereby no more passes, We are unable to see 1 series, but with X ray. There are a great number so matter Channel reach a quiescent stage, like the stress in a Condenser or iron in a helix
Try a shutter with holes or slits + intermit Ultra from a Quartz window Hg Arc also Reg arc on opaque matter, with gold leaf & also photo plate, make 100 000 sec if possible, perhaps can produce X ray phenomin, 24" disk 5000 Rev. 1/32 + 1/32 space gives about Million sec
This would be concentrated + should be very sensitive photographically

331

In all exptls heretofore recorded where stresses of various kinds are to be used add Monochromatic light from Hg arc in Chamber with Quartz windows & use with & with siren or Shutter —

332

Use sheet platina heated by current to 600 @ 800 fahr or to such a temp that the Crystals found in Edison Cone will phosphoresce — Then try other Crystals & by regulating Current quantitatively measure relatively also try these in Magnet field, Elec alternated stress field



333

Use helix few turns Copper wire 1/4" hole — Energize with wireless waves — use disks of different transparent Material, liquid, etc for light Expmts & Opaque for X & Rad — Notice any phenom out of ordinary due to this rapid stressing —

334

Intermitting ultra violet waves from Arc light or Hg arc with quartz window should give lots results on matter, If can get ½ million intermittances per second, its only on rise and fall of a stress one gets results from matter.
Try its effects on fluorescent bodies and all slides with crystals, many crystals which will not fluoresce with a single stress, might if alternated + given ½ million per second.
Even heat + E would do something

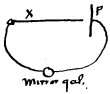
335

Fluorescence is to light what soft iron is to Electricity
Phosphorescence is to light what a permanent mag is to Elec,
With fluorescence the stress goes quick.
" Phos the stress remains
Minute impurities have great effect in increasing fluorescence + Phos, so minute impurities do the same with Iron Manganese Etc
Fe Si Mn Sb-

336

If one X Ray tube gives a photo in one minute with 2 tubes the rays of both striking the plate ½ the time, if so a number of weak ones should produce great fluorescent photo power

337



X magnesium ribbon set on fire. P platina disk — Ultra should make space conduct.

338

f is polished metal c Ultra violet rays exit of rays e h polarizes ray Core has on its end outside of hollow shell a coil wire — use shutter for light.

339

Electricity may be innumerable vortex rings running along the wire, it starts as a wave at right angles (to advancing) to wire, but by friction of matter on 1/2 of the wave + no friction in the ether. these waves turn into vortex rings, This causes channelizing

340

The principle of a megaphone or funnel may be due to formation of vortex rings These tend to continue their direction & would explain many things about sound Ganot says several resonators turned to a certain fork + put on a wheel. will when held in front of the fork box repel the resonators + give revolution and say that no explanation of this action is known — there cannot be with sound waves, but vortex rings can be formed + its this that produce repulsion,

A phono speaker filled with smoke gives rings Try a funnel + smoke + with diaphgn + 100 vibrations seconds, use revolving mirrow + see if 100 smoke rings + if there are then this opens new field — Stresses that travel 1088 ft sec and 30 ft sec

Should be able to transfer smoke from one point to another thus

Dont work good

341

Velocity sound in CO_2 856 ft sec
Air 1093
Hydrogen 4163.

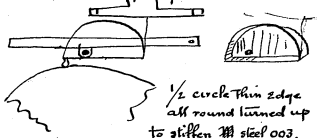
Make funnels with mouth closed by loose thin rubber & displace air by CO_2 - H, Chloroform

342

Rotate a disk of iron 2" dia ½" thick at very high velocity. guard it by a shell over it of different kinds of matter, Then over this delicately suspended dif kinds matter See if any kind of attraction in direction rotation or otherwise, Use lead Ni + other things also stress the rotating body with all the rays. ditto the suspended matter.

343

As the diaphragm of a phono speaker is really a lever 1/8 thick 5/8 long & flexure is enough to give the sound waves. then the sole reason the amplitude of the Dia cannot be increased by leverage not matter how hard the record may be is due to the flexure of the bell lever. To make this so there is practically no flexure make this



Try aluminum 004

344

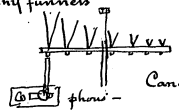
Make a test record of Piccolo too on down to lowest note we use. = then try funnels every length see if on Piccolo a long funnel is any louder than a short one. I think for high notes all lengths give same strength with piccolo but as the note gets lower the volume diminishes — This is due I think to Vortice rings. Think Vortex rings being more local will carry the sound better to

the ear than the sound waves,
hence its probable long slightly taper tube
should be used before reaching funnel
of tone lower than the lowest note.

This long tube will throw <u>all</u> the sound
waves into vortex rings and as these
do not spread much concentrates the
sound, possibly the vortex rings travel
at same velocity as sound but I think
not.

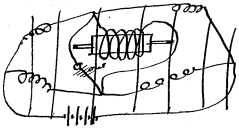
345

For testing funnels rig up a circular wheel
with many funnels

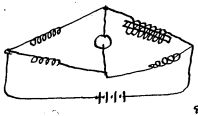


Can change rapidly

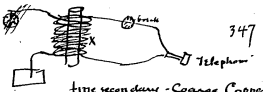
Can decide between a lot of funnels by
one sustained note & continuous rotation



346



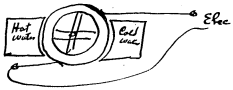
use strong current
Laminated core
rotate at great velocity
8000 min.



347

time secondary - Coarse Copper heat it
+ put one end in water to have heat in one
direction.

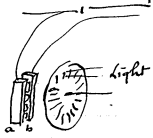
348



Shell of glass coated over with gold + other metals in Vacuo + then both coated
Extra to .00005 2 collector brushes used
unequal heating and reversal should give current, perhaps requires certain metals for collector brushes. Work the Cells very close to ring

349

Iodide Silver is an exception to all bodies
Contracts by heat. interesting material
use it,



350

a b are metals between which are crystals
a Revolving shutter with slots intermits light

when the light strikes crystals work is done whereby they are stressed + fluoresce, some crystals become electric, some phos. If these crystals are provided with metallic armatures the light will be changed to electricity. The more rapid the intermittencies the greater the energy that can be transferred, depending upon the character of the crystal = possibly the armatures must be attached to crystal in certain direction =

x x' rock salt plate
This makes a cell which can be filled + emptied. = To transfer energy its necessary that matter should be intermittently stressed, + here is the condition

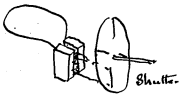
Pyroelectric crystals are hemihedrial
Tourmaline is pyroelec - poles at end.

Tourmaline crystals End on + grounded to fit gold plated lead armatures pressed + held so make contact with all the crystals

Boracite + Silicate Zinc or Siliceous Calamine
Cane Sugar. Brazilian Topaz
Axinite Prehnite Sphene Mesotype
Skolezite Mesolite rhodizite rockcrystal
amethyst Tartaric acid neutral Potassic Tartrate
Rochelle salts
Some crystals not hemihedral are pyro
Sulphur. Sulfate Ammonia Carb Ammon
KChlorate heavy spar Coelestin Calcspar
Fluorspar Sulfate Mg Sulf Mg+Na Beryl.
Iolite diopside vesuvian garnet Analcime
red orpiment Cerusite green vitrol
K Ferrocy Corrosive Sublimate Oxalate ammonia
Citric Acid. Acetate Lead. There is some
doubt about this non hemihedral but
Brewster examined them + found them
pyroelec Hankel reexamined + say none
showed any. that Brewster results
must have been due to <u>other causes</u>
Tourmalin is best = electric polarity is
only shown when temp is <u>either</u>
<u>rising or falling</u> exhibits none when
temp <u>constant</u>. one end becomes P as
it receives heat + N as it loses heat.
pyro is limited bt 10° + 150° Cent.
according to length of crystal.

If we get Elec by working shutter very rapid will have alternations too rapid to use - perhaps Bardy form of Aluminium Rectf. will straighten out - Think pyroelec Crystals are not what is wanted but fluorescent cryst which almost instantly cease fluoresc when light is withdrawn but reach high degree + die quick - perhaps best will be those which no fluor can be detected in Becquerels Phoscope the effect dying out so quick - Perhaps Shutters must be arranged to reverse direction of light thru Crystals. If can get great Conversion then probably refrangibility or rate be so lowered that no light will pass Crystals

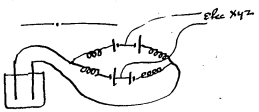
If light produces effects or stresses which lowers its refrangibility, the substance fluoresces, then if the substance could be made to fluoresce by wireless oscillations in helix or as condenser we might possibly get it to fluoresce to rays in Ultra Red



Opaque crystals might work OK say ruby absorb all but red, Alum absorb Red let others Thru = Mica absorb Ultra + give Elec to armatures by intermitting light by shutter.

Perhaps lot fluorescers + Phos. will show self luminous if put in sealed tubs in a liquid in which they are not sol and heated to get rise + fall Temp many crystals that dont fluoresce might be made to by pressure when acted on by rays or amplify those that do Could use Electrolite's. say H_2O with little KOH + Aluminum or Hydrocarbon + little water + Calcium Carbide or Zn + Acid to form gas + get pressure

All crystals in the regular system deform in all directions alike, all others deform in specific directions



Cell with 2 electrodes, bridge rectifier or Emq or wireless receivers as Elec may be in form of rapid oscillations, make chemical reactions in cell - or dissolve salts, hydration - make chem actions disymetric to electrodes, heat one not the other, have reaction take place vicinity one pole, Magnetic field one pole
Also dissimilar metals,
Also KOH Electrolite Pt Elec other
Aluminium - Put in solution
KChlorate which take care H of reaction

It is probable that the Reason low notes are too weak in phono is that the straight part leading to the funnel is too short, [less than the wave length of the low notes] to form a vortex ring and thus get additional volumne from their utilization

If vortex rings diminish volumne and are not utilized then they ought to be suppressed to suppress or diminish power lost
the surface of funnel should be glassy
Japan varnish, + a great amount of experiment done with shape of exit hole between Diaphm + funnel.

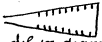
A battery should be a thermo juncture between K ions + Fe electrode [Ni, Fe KOH sta 0] and K ions and oxygen electrode, Nickel metal on both sides The temp ought to rise at the Fe and fall at NiO_2 side = try it

If ions are conductors then really there is no open circuit in a battery, if there is then its at the juncture of the ions and the NiO_2 - even this is a conductor

In a funnel to break big + to form little vortex rings. use disks

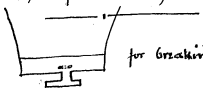
about 2" apart of 1/4" mesh Screen

To increase vortex rings



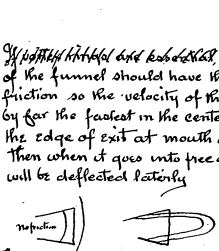
use washers this

Every inch, 1/2 dif in diameter

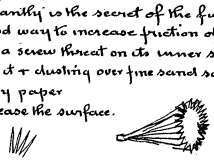


for breaking up vortex.

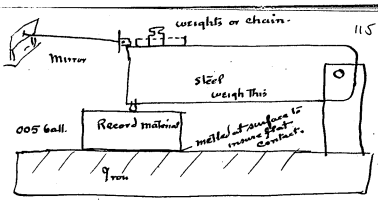
~~[illegible]~~ The inside of the funnel should have the greatest possible friction so the velocity of the wave should be by far the fastest in the center and slowest at the edge of exit at mouth of funnel.
Then when it goes into free air only a portion will be deflected laterally



This apparently is the secret of the funnel.
Perhaps good way to increase friction of funnel be cutting a screw thread on its inner surface or painting it + dusting over fine sand so its like emery paper
Also increase the surface.

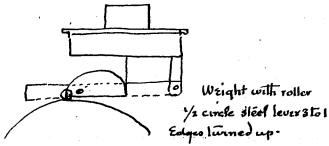


Doubt about this Vortex Theory



Make experiments on elasticity and flowing properties of different waxes used for phono records.

When I return make at once



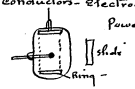
Use standard machine. To get no spring use solid mandrill. record reamed to fit. work out good way adjust relation, had it once have forgotten it — Use new hard record

Try all crystals that will stand it, bring to red heat or higher and drop in ice water to put strains in them = if they are fluorescent notice if weakened or strengthened by this treatment + if non flu are made fluorescent Crystals like Nitrate Uran which dehydrate they can be brot up nearly to the point and chilled

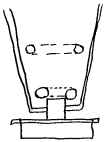
In trying magnetism of alloys and non mag metals use rings heat them up as high as possible and drop in ice water

Make 1/4 recording knife for phono, using track wide enough to get regular depth which is 80/1000? The edges will bring up vibrations not now possible for us to see possibly could use shaving knife as recorder and wider track, We might learn a lot from this.

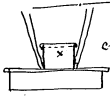
Celluloid, Mica, Glass cell. Small cathode 1/4 dia - large anode 3 or 4 inch - Use plating solutions and regular salts Use heavy currents Try the slides with crystals, all fluorescent, photo for rays from small pole with current in both directions Also send rapid oscillations + reversals - There certainly should be powerful stresses on the small electrode, guard it with glass (ie) connecting wire - have one made only 20/1000 Exposed + others larger
Also in non conductors - Electrodes close together



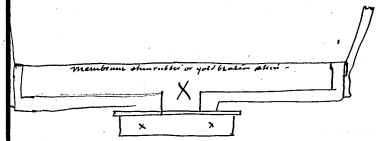
Precipitate Tungstate Ca with 1/8 % + 1% all kinds of other oxides, wash dry and ignite also some chill after igniting see if fluorescence increased with light X or R -



Make funnel this shape to allow vortex not being broken at Exit.

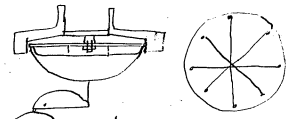


Close X by delicate membrane loose, fill dia chamber with smoke, Lycopodium and turn sound wave into a vortex ring. The solid matter would probably carry more energy. What would probably be better would be this

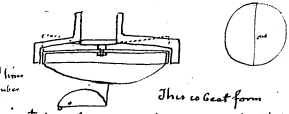


using the heaviest known vapor with or with air in X =

A non flexing diaphragm can be made thus

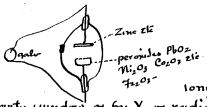


Fastened at the center



This is best form

as the flexing takes place around an edge only 1/8" dia instead of 10 1/8th or 10 times differ it should be very sensitive and make big amplitudes very small diaphrams with the sample amplitude or more to fully make up for loss of area — thus permit lightening the mechanism of Converter. No rubber necessary



Ionize by Ultra thru quartz window or by X or radium.

Investigate the nature of the white Nickel oxide produced by prolonged heating of green hydroxide in strong KOH, it is not active in the battery but it is white, is it anhydrous.- How much O is there in it or is it a compound of NiO with KOH. Try action of strong hot KOH on other hydrated monoxides.

Edison effect

x try Zn & also Ni_2O_3 on center wire.

also Zn at C Ni_2O_3 at X & reverse — also PbO_2 Mg Al.

By making Aluminium condenser with tissue paper moistened with the electrolite could reduce the resistance to practically nothing and thus diminish heat. Several in series or multiple –

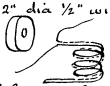
See if the mutograph chalk acts like a rectifier with Aluminium pen and Mandril with Carb Na + other liquids and at same time gives the friction effect.

Iron helix turned out solid

Try various things inside by rapid alternations in a.

Condenser made of Zinc + Silver plated Copper foil, or Al + the latter, see if by changing poles can get dielectric capacity down by coating wires for Telephones. also In Fe –

Wind a helix 2" dia ½" wide ¼ hole



wind this

or non inductively. the difference in velocity should show up— It might even be possible to determine the speed of elec this way— try different things in the helix use 36 @ 38 wire—

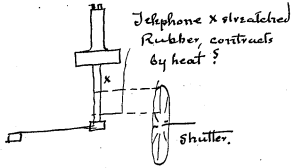
Is the Pupin scheme correct = when I get my artificial cable from Marshall try the magnets across the line and look out for their discharge changing times so they shall be equal + opposite to the section they are to compensate for.

Probably considerable amplitude of the speaker diaphrm is lost by flexing the mandril shaft especially when try increase amplitude by the use of lever, also the record wax as a cylinder flexes—
could stop flexing shaft by dia increase—
But standard beat and thicker walls to mandril shell—

Rig up good apparatus to test flexing of shaft + Records, also see what is natural tone of record + shaft, by bowing etc.

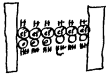
Lead and Bismuth outside Uran + Thoria heaviest metals Ur heaviest metal has lowest specific heat Lithia the highest
Bi Pb 0.0308 Lithium 0.9408.
would be interesting to experiment with. Beryllium + Bi Pb + Ur would be fine as a connection with HHO or OH.

Interesting substance for light and ray Experts, Sulphur, Cubical expansion six times greater than any other substance



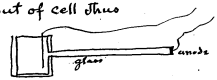
Radicals are the suns of lighter worlds or atoms like Hydrogen.

Further thinking shows hydrate theory electrolysis plausible, but metals +tt. of the molecules set themselves parallel with electrodes a series of rods from P to N poles the center or core formed of Radicals or P elements and circumference of metals +tt, or Neg When a radical combines at one end and metal at other there is a to + fro motion or vibration of these rods. in fusion same action takes place without necessity of water.



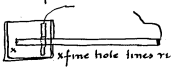
Vortex ring so to speak

Possibly an anode made as a tube 1 ft long or a cathode, insulated on outside or Getter Extending out of cell thus



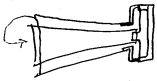
that Cathode or vice versa might show something by flashing or momentary deposits

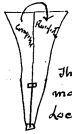
at X a very fine hole
in insulation plate hole too -
S silver plate. deposit Cu Pt or Pb rings etc.



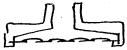
X fine hole times reverse direction

Magnet wound this
way should attract diamag bodies of
put in ring form should produce opposite
effects to reg way —





This is easy
made + should
localize the sound



Valve diaphram.

Flap shellack to dia-

There is not much doubt but what Emg action goes on in the Nife storage Battery its probably increased by fine porosity in the individual particles on discharg pores of FeO tend fill with water and $Ni(OH)_2$ with KOH. Fe tends to dry out and actually have only gas contact, The larger the pores in Active material the better but particles should be fine, anything that would stop action of Chrg would do same thing in Battery!!

Iron ball heat conductor from N to S when ball highly magnetized out to be better, flame from X X' one has molecules set in more favorable condition one way than the other Electricity also

Iron cylinder magnetized by alternating, telephone wire by friction –

If magnetism of iron is a function of variable elasticity make some Cl Co + Ni reduce by H melt in Lime crucible with OxHyD flame test mag Co should be more mag. than Fe.

If magnetic group of metals are magnetic in proportion to their afinity for O. then the grouping should be Ni Co Fe M. or capability of higher oxdtn Scale is still the same in the electrolytic series they stand the same In their afinity for Sulphur their order is Exactly reversed. As to Volitility of their chlorides same but regular from Ni to Mn later weakest.

Their atomic weights still have same order Ni 57 Co 58.88 – (this been disputed) Fe 55.91 Mn 53.90. Cr 52.01 Vanadium 51.25 all the pritox solu NHq salts + NH4

If atomic weights is the reason the scale should be Van Chrom Mn Fe Co Ni. The difficulties of preparing the metals diminish as we descend the scale.
Probability is that its something like the periodic system.

Mn
Co Fe Cr
Ni Va

Mn being the most magnetic
Ni & Vanadium the least. Mn alloys have already been discovered that are quite unmagnetic, Mn is the metal to make discoveries with.

Longitudinal vibrations mechanically executed along a magnet wire should vary the Mag & throw currents into a secondary
Cold should increase magnetism & converting power X ray striking end of magnet in Induction Coil should increase converting Capacity — Dissolving off end by acids should throw oscillations into secondary, but would require a wireless receiver to detect them.

Should increase converting power (10) act act like a magnet to rapid reversals from action of Focaults + juncture action

---

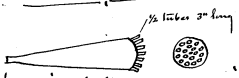
Low gas vacuum down to a point of no electrical carrying from Edison effect when burning at 2 watts candle

Then put in high vacuum prevent loss ~~[illegible]~~ high volts use inner glass bulb which absorbs least heat probably inner globe should be small.

A transformer under hydraulic pressure in oil, should have a much higher converting capacity ~~[illegible]~~ = Also the punched sheets dipped in Kly red hot to ~~[illegible]~~ harden coil + dropped in cold salt water. To cause more work to be done to change its dimensions

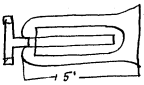
Measure Edison effect with constant amperes on lamp and constantly increasing Vac up to X ray point + beyond Also E effect without Center wire, but with gold or other foil on outside of globe, also keep it cold, also see if detect constant current when large surface (+small) is not in actual contact with the glass, also photo. see if a ray there,

Emq Small Crooks tube thru which inductive charges pass, with & without x contact see if currents pass glass affecting friction — it does

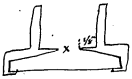


Funnel for giving Vortex sound wave rings

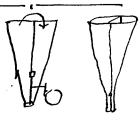
Try different shapes at X



Phonofunnel.

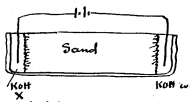


Edges like a razor
Diminish Vortex

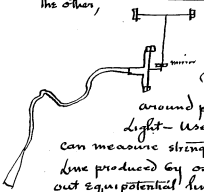


Holes in funnel 1.25 dia
Covered over with thin
cloth + film doped.

X - Did it on dischg 155 mily more than mchg
in KOH 21%
15% NaOH, 145 " " "



How long will it take to detect LiOH by spectroscope in X. also KOH 1 side LiOH the other,



Phonoscope for exploring around phone 60 @ 80 ft beam Light - Use test record same note. can measure strength by width of light line produced by oscillations, Can map out equipotential lines with any given kind of funnel or measure with standard funnel the value of a Reproducer

X Dr Grothe determine % KOH, NaOH, LiOH, in K+NaOH. in charged vrsns and Ni also dischgd, use always same electrodes and after each determination 48 hour soak in large quantity water, then 48 in large quantity of the proper % of Alkali only charge to 85% efficiency = In removing give one quick rinse

Use glass cell and after all the mix has come out that will, change solution put in 200 Mlg Sulphur see if in tests the sulphur bleaches from iron dissolving in the solution.

Set up 4 Nickel tubes with Ferrous Sodium Sulphate iron + 250 Mlg brimstone sulphur put on endurance also another cell with 50 Mlg Sulphur, Important to know how sensitive Iron is to S. Put up Duplicates of regular iron.

Reason why phono reproducer dont throw sound waves out in the air when no funnel is used is that the pressure cant raise sufficiently high to give any heighth to the sound wave, the compression side of dia is so near to the rarification side, wave cannot rise to any heighth, The dia does very little work, it looks as if the free air exits should be at least as long as the wave length of the lowest note used.
for Recording the funnel should be longer for a man than for a woman.

Closing one end of the chamber opposite to the funnel would make the dia a little less sensitive by giving out heat, yet there would be no interference waves mistiating the sounds from the funnel.

Ferrous Na Sulphate iron reduced by H and pressed in a cylinder surrounded by a coil would be good for transforming high frequency Current.

It is evident that the changing rate of $N.(OH)_2$ diminishes very rapidly at a distance from the contact, the result of high resistance of the $N.O_2$. A good distribution is essential between the flake + $N.OH_2$ after oxdtn proceeds into the nickel ox for a certain distance it. Can never go further, other actions come into play—

Have Holland when I return chg + discha 5601-2-3 at constant voltage + put this + chg + discha at constant amp on ohme sheet.

In charging battery - we have concentration voltage, gas voltage, Capillary EMF voltage and gradual rise in res of NiOH on charge and in a measure rise of res of iron on discharg -

When get north, make a test in small req pkg machine with 50 flake 120 green using glass tube + letting down tamper by hand to study segregation of green + flake

Have John Ott change single rod packer so that the relation as to time can be changed + also changed as tube gets fuller Can use packing arm holes

Pass $Ni(OH_2)$ thru 20 fines in thru rolls with enough pressure to flake it Then screen thru 20 + make group with simultaneous feed.

Fusion of Calcium Carbide with anhydrous salts should give some new reactions, fluorescers etc.

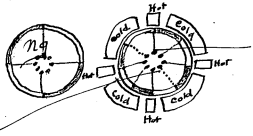
For fluorescers and light by scratching fused silicates of the metals, Silicotungstates

Can crystalize under pressure by using concentrated solutions in one leg of U shaped glass tube, the other leg being filled with Chloride Calcium or Phos Anhydride, The gas pressure got by 2 platt wires and Current or by Calcium Carbide in small glass bulb with fine hole. Could seal on another U tube with Hg + air space the compression of which indicates the pressure. Try Ni Co Fe mix salts thereby in powerful magnetic field

What are products dissolving Silicon Carbide in H Fluoride

See how thin sheets of Ni can be made by the flake process.

Thermo dynamo.



Rotated by power no pull gives alternating Currents (which have strengthen) rotation only for Commutation + alternating the junctures by using ring collectors get alternating currents. Think radiant heat should be used, metal at junctures not more than .0005 thick so reach high temp quickly + lose quickly and also have no amperian or Focault losses can do it thus

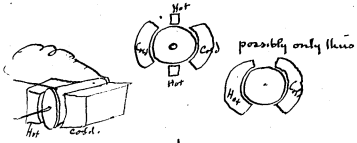
Can coat insulating cylinder with Sections of Bi by vacuum process guarding the alternate sections then guard the Bi + deposit Sb overlapping

For straightening out very high frequency oscillations with Aluminium rectifier use Al salt and deposit the Al_2O_3 by slow current on polished silver, gold, or Speculum metal? or gold on glass by Vacuo process.

Thermo dynamo, plate Cu on glass cylinder .00005 or blush + finish by electrolytic deposit, Then guard each alternate part say ½ inch wide, and sulphurize every alternate section clear through to the glass This is more powerful than Bi-Sb, and think it will have lower resistance, How is Selenides or Tellurides Cu for Thermo

Perhaps a thermodynamo can be made without contacts of different metals by coating steatite or slate cylinder or perhaps non porous lava cylinder or porcelain, or new quartz cylinder with Cu or Au by gold vacuo process and then plate with copper .001 more or less

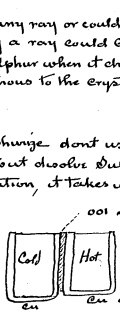
Then sulphurize all except the ends leaving 1/4 inch there for contacts fingers



How much Zinc oxide must be dissolved in KOH to raise the charging voltage above the regular iron charging voltage when it shows considerable rise try the discharge voltage, and see if they agree also Manganeese, want to see if traces appreciably raise the charging voltage without showing correspondently in the discharge voltage

So than any ray or could conditions be made whereby a ray could be made to come off from Sulphur when it changes from the amorphous to the crystaline.

To sulphurize dont use chloride sulphur alone but dissolve Sulphur in it to saturation, it takes up 66% —



Also Amorphous Phos; Metallic form of Phos
ditto Sulphur Selenium —
Sulphides by plating the film + sulphurizing
Selenidz Iel Phos etc
most of these substances conduct and some —
Can be plated on those that cannot can be gold veneo deposited and afterwards Electrolytically deposited.

antimonides, Sulfides Selenides Phosphides Iel of Sb
Thermo

Conductivity for Elec of Sul acid solution lead battery 100 times less than amorph phos and 900 times worse than Tellurium

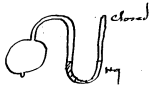
Try metallic form of Selenium for chemical recording points

Tellurium combines with Sulphur by passing HS through alkaline Telluride when dry + is rubbed presents metallic appearance, Use thermodynamo

Phosphorous formed when it is heated under pressure to 580 Cent is better conductor of Elec than amorph Phos. Hittdorf Pogg Anal CXXVI 193.

As we can plate Zinc on magnessium through the layer of oxide of Mg try plating flake by dipping Nickel cylinder in Magnesium salt + flush it with layer oxide by the current wash + plate Ni + so on — dissolve out MgO by acid — perhaps if fails, Alumina or other oxides will work

Try in flake process Zinc instead of Co to form the first layer for chem reduction to Cu



Gas under pressure Chlorine -say- will X ray or Rad change pressure.

Will light reduce endothermic Ni_2O_3 aq to lower stage direct or by aid of organic matter or reducing agents? If so might take place Bichrom in Gelatin process also make good negatives, might be very sensitive
Use glass plate coated mush $Ni(OH)_2$ + use hypo- or a Ni plate coated + peroxid'd by current in KOH, Try X + Rad.
How about $Co(OH)_2$ Perox Ba Ca Sr aq

See K_2H Na_2H. Troost + Hautefeuille
Compt Rendus. lxxviii page 968.

Chlorine hydrate $Cl\ 5H_2O$. try Kohrausch method.

my hydrate theory

If its a conductor see if its as good as if all decomposed to HCl. It forms at 10° Cent try measure res at 5°. gradually reduce Temp and see if conductivity changes as Temp reaches the Temp of hydrate formation also conductivity in falling from 18° to 3°.

Polished aluminium plate in dry Chlorine photo slide sealed, Cl under influence light probably attack Al. at bright spots.

A photo slide plate coated thin porous film, soak in terpentine, put plate in Chlorine the part acted on by light to decomposed probably Can be wet,

Plates coated with Metals in very fine state of division dusted over a sticky surface probably in presence Chlorine dry would be acted on by light,

Lead Bromide insol, does it decomp in K or NaOH,

Perhaps Iodine which conducts Elec slightly Could be used in Thermodynamo or Combined as a solid with metals Iodide Hg Ag Pb Etc between plates

If with several substances dissolved in water varying from good to bad electrolites say 1 gram per 100 cc water of best salt & then in another cell add poorest salt in such quantity & increasing the heat to help solution get the same conductivity what will be the relative amount of the 2 salts in solution might be some interesting results by making curves of a number of salts.

Try Nickel plate between which is a layer .00001 of sulphide of a metal, Hot & Cold water —

Make a collection of colored salts put in Celluloid Cases arrange them around an X ray Tube, Keep it going for a week use another X ray tube and arrange the best fluoresecers & phos ½ of each guarded from ray by thick lead Try for a week or more notice loss or fatigue of crystals, ditto Rad

Make very finely divided Tungsten metal by reducing by H in Quartz tube white heat CP Hydrogen, dip a Carbonized filament of Carbon in asphalt also sugar, dust over + coat filament with Tungsten just as you would graphite it, Carbonize in Hydrogen Ditto try lowest Vanadium Ox, also graphite.—

The definite Antimonides may be good for thermodynamics,

Perhaps sheet made of layers of Copper sulphurized then plated with Antimony then Cu plated and sulphurized or Pb. plated then Sb + so on many layers .00001 thick each would if heated one side + left to radiate in space or water cooled utilize a large amount of the heat as E by the gradual fall of temp through the sheet,

Finely divided Selenium is made by precipn with Sulphurous acid.

Make Sulphides of Phos. there are 6 — for thermo

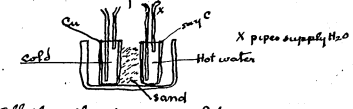
Read up thermo pile expmts Phil mag.

On the Theory of Thermo electricity Kohrausch Pogg Anal Clvi 601 O J Lodge Phil Mag [5] Vol ii 524

Cuprous Chl Lead Ox + PbChl conduct slightly at ordinary temps without decomposition and conductivy increases by heat nearly upto MP. Weideman says they decomp Try Cu + Cu and + cathode dry, hot, Ditto PbCl + Pb + PbO + Pb.

Conductivity of Tellurium
Calling Silver 100 Tellurium after fusion + very slow cooling 0·00435

Following is descending order of conductivity of Chlorides at 18° C. NH_4Cl KCl NaCl LiCl $CaCl_2$ $BaCl_2$ $MgCl_2$ a max conductivity below point of saturation is shown by $CaCl_2$ $MgCl_2$ with the others conducting power increases continuously with Contn in various degrees KCl increasing exactly in proportion to Conc Worst Conducting Solution is $BaCl_2$



All the different plating solutions, having all kinds Gases + radicals, get a Thermo, both poles same metal as in electrolite, to get no polzn If fair can arrange pot hot + cold cells like storage battery Can use Copper Cells + plate metal to be tested on the Cu. Perhaps can use a solution like polybulfid Potash, Oxidize one pole reduce at the other + get no polarization using sand diaphm + reversing Cold + hot at intervals

Ferric + Ferrous salts without deposition of metal if current not too strong.
Can use all kinds of radicals with bases which form ic + ous salts.

Possibly Manganese metal can be deposited from KOH, containing a Manganate or Even a Sulphate if cell kept cold + Magnesium cathode used

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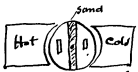


Electrodes Carbon

Ferric + Ferric Chl or Sulfate rotate + Commutate also with ring get AC.

Chemicals for Electrolytic Thermo
Salts of Cerium - Iron - Copper Tin
Mangan Chromium Vanadium, Mercury
Arsenite + Arsenates Sulphides Tellurites etc. id.
Ferro + ferri + Co Mn + other ic + ous Cyanides
Potash Solutions or NaOH KOH, with metals with their oxides same thickness + fineness on both poles
Cu Cu_2O — Fe Fe Reduced by H. + FeO — Bi Bi by H. eg:
nitrate a Nitrite K.

Regular Ni-Fe storage battery irons forming both poles, one charged the other discharged if now put in KOH. one iron heated the other kept cold. The heat will diminish the affinity of O for Fe and cause O to oxidize the cold metallic iron, possibly with iron its just the opposite of this. However this diminution of affinity or its increase by heat accessions should give a current until the the oxide plate is reduced to metal + the metal plate oxidized. Thus with heat we should produce E without it being due to so called thermo current at juncture of metals, By now reversing the heat we get a current in the opp direction, This is only plating O so to speak.
With Copper in KOH could use high temp and strong KOH. CuO not sol then, possibly might go to temp 400 on hot side if cold side kept down to 50.

May not phosphorescence in Alkaline Earth Sulphides be due to change of sulphur therein from amorph to Crystaline the light starting the reaction, which takes months to perfect cryst condition
Selenides of Alk earths should be even better as more energy given off in passing from Amorp to Cryst.

Oxalate of lime and other salts which become electric by friction might if heated with little sulph to make it amorp would become fluor or phos. Try Oxalate Lithia ignited precip Calloy melted (after powdering) with a little S. Try Willemite powdered 200 mesh.

Even phosphides of Ca Sr Ba made with CP Phos so remain white would if sealed up phosphoresce.

In electrolitic Thermo, possibly Sulphides will work better than the oxides in sulphide of an Alkali Selenides phosphides Tellurides, Arsenides Antimonides,

Thermo Table

Bi	+ 25	Pos
Co	9	
Ni	5	
Cu	1	
Iron	5.2	Neg
Red Phos	9.6	
Sb	9.8	
Tellurium	179.9	
Selenium	290.0.	

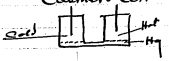
Current go from Bi to Sb
Bi is the Zinc of it

Emf of Bi Cu dif 100° C is from $\frac{1}{100}$ to $\frac{1}{250}$th of 1 Volt.

The alloy I have found is far in excess of this — Becquerel says his CuS artificial has voltage 10 times greater than Bi Cu —

Electrolytic Thermo

Cartmers Cell.



K is transferable ok

Phosphorous acts on Copper sulfate to form a black solid phosphide which is not affected by air or moisture and melts at a red heat,

Cupric Sulfide made by acting on Copper by CS_2 containing dissolved S.

For quickly testing Electrolytic Thermo Couples

Copper anode + Cathode in strong sol Cupro-Cyanide Potassium.
Ferro + Ferricy "
Electrolytic Therm.

Nickel sheet should strip from Aluminium when Ni Nitr Sulfate is used, as Aluminum has an oxide on it. Can deposit a thick Coating of Ox by Current in Sulphate Al Sol & think –

Magnesium anode and cathode in KOH one hot the other cold, may work as simple Thermo, also dissolve all the hydroxides of metals & test,
Aluminum Cathode & anode in Salts

If electrolytic dissociation theory ok Everything in the water is dissociated Except the Excess water, the metals go together & the Radicals together. With Aluminum Anode the radicals are to Complex and large to go through the pores formed, If H can drop its Charge on Reversal on the film why Can't the radical,

Try Telephone transmitter with Becquerels CuS rubbing with antimony, try direct + in primary –

If a good thermo say CuS. Touches a hot body get its highest voltage at moment of contact or do voltage rise slowly important to determine this point

Electrolytic Thermo.

Cu plates $CuCl$, both poles hot + Cold probably one reduced to Cu other to $CuCl_2$ – but this is soluable so if start Cu fine divided & $CuCl$ then it would reduce $CuCl$ to Cu_2 form $CuCl$ at other pole

Ditto Cu plates finely divided Ferrocyanide Copper Ferrocy solutions –

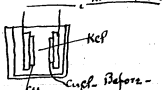
Ditto Cop electrodes lowest oxides Vanadium

Bismuth and Antimony powders pressed hydraulic in a ring wound with wire, should give good kick as internal circuits are formed a la thermopile. Also the 2 oxides reduced by hydrogen, this might be better possibly use alloy Bi 88 for a ring

Cellulose filments dipped in Chl Tungsten after being semi carbd

Fluorspar Coff becomes phosphorescent by heat, possibly its this that gives light when Edison ore is heated, if its apatite, this has fluorine in it. See effect of stressing it by Elec oscillations + heating at same time

can make by precipitation, forms microscopic crystals



Before - after the Cl transformed no energy absorbed in Electrolysis - Thermoelectrolytic Chl Br Iod acid radicals + everything which has mutual reduced + salt produced combustible in electrolyte

Try all the crystal slides by flash light Mg powder, use cartridges so can make quantative measurements, in addition to Hg + Carbon arc. + ditto fed with metals and salts & oxides etc

Mould cylinder of Oxychloride Magnesia boil out MgCl. leaving porous MgO. for EMG Try OxyCl Zinc. etc

Wet chalk Emg with LiOH, KOH, Rub Caesium Mhy — When get cylinder of inert matter to acids Try all the salts + acids —

Make some precipitated Zinc sulfides for Fluorescing White Zinc Sulfide insol in Alkali Zinc Phosphide, is metallic like. Thermo,

By using lead cell and chloride of lead hot one side cold + reversing, could take advantage of insol in cold + sol in hot water of PbCl. the current reducing the PbCl to metal at cold + vice versa

PbO_2 dissolves in moderately conc phosphoric acid, its an oxidizing liquid, only decomp on boiling — Thermoelectrolite.

Lead Electrodes, Sulphate lead Electrolite H_2SO_4
Thermo one hot other Cold

There are lead sulphides lower than Galena PbS
Pb_4S Pb_2S made by fusing finely powdered galena with metallic lead, 100 galena 84 Pb gives Pb_4S heat in well closed charcoal crucible if done in earthenware Crucible Pb_2S is formed

Copper pen, chemical recording paper
Hydride of Copper forms on Cathode develope by H_2S, or Hypochlorite Na.

Thermo — Cu poles Cu_2S on one CuS on Cu on other on heat CuS decomp to Cu_2S.

Electrolitic Thermo H_2SO_4 Antimony High + low oxdtn, neither ox sol in H_2SO_4

Vanadium Tetrasulphide V_2S_4 Black insol alkalis or HCl H_2SO_4 also hydrated salt on precipitation is brown but goes black not decomposing on drying Unites with basic metallic sulphides forming sulfovanadites also V_2S_5 black stable form sulfovanadates Above for Electrolytic Thermo.

Sulphide iron, mequetite may give rings for high counting of rapid oscillations no faults on long iron circuits to delay

Precipitated Magnetic ox filament it would be high resistance

As Aluminium electrodes in Vacuo tubes dont carry either oxide or metal it should act as a rectifier for wireless Eng other receivers which may want direct current use in that stage of Vac in which discharges take place with lowest voltage.

Theory April 2 1907. 117

Battery Zn KOH NiO_2 circuit X. gives off heat and if radiating surface is small enough, gives both heat and light from the internal combination of the Oxygen with the Zinc, So far as the senses are concerned the results of combn of O with Zn to give heat cannot be determind within the cell but we perceive that the heat is given off by the wire.

2 Now the internal combination of the O + Zn does not take place when the connecting wire is broken it only takes place when the circuit of metal is complete connecting the O with the Zn

3 When the circuit is open and has never been closed there was a slight combination of O with Zn and this caused waves in the ether to pass along the wire and stress the air to the extent of the pressure due to combn of O with Zn. hence a momentary current passed but almost instantly ceased as the air has a stress limit The air is stressed like the glass of a Leyden jar,

4th = Metals cannot be stressed to a limit hence when the circuit is closed, continuous combination of the O with the Zn takes place or The ether waves generated by the combination of Billions of atoms Zn O per second pass over the wire the outside air still being stressed (12) its initial stress, is static,

5 Now the atoms of the metal conductor are probably locked to the ether so that there is resistance offered to their passage, and the rate of vibration is probably enormously diminished below light waves, by atomic inertia Either the friction produced by the vibration of the atoms causes the whole of the combn energy of the O+Zn to be given off to the external ether as heat waves therein - or the motion of the slower moving atoms or waves send out heat waves in the free ether in fact all the energy of ZnO is lost in the ether of space as heat, radiant or converted

6 If Zn is burned in air we get heat waves directly to the ether because the combination takes place in air which is a medium which has a stress limit, hence no channelization or current of E can take place all that might possibly show electricity would be the stress between ZnO &c.

7 But if the combination can take place between O & Zn under conditions or in a medium which has no stress limit, then the results of combn are transferable along this non-stressable Cannalization, and continuous combn takes place.

8 Regarding the nature of the waves passing around the circuit, its probable that they are of great amplitude and length, travelling in the wire and Ether and extending out considerable distances from the wire into the free ether.
Or there are bunches of waves in the wire and free external Ether, gradually weaking in amplide at a distance

9 As the air is continuously stressed while current is passing and as free Ether offers no resistance to the waves no energy as heat is lost in that part of the energy which is conveyed by the free Ether, the whole loss is due to the metal atoms vibrating with the Ether

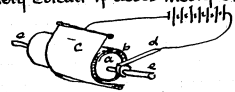
10.

The reason why a pound of one metal drawn into wire will conduct the current say 3 times further than a pound of another metal drawn into wire both receiving or rather losing the same total energy, is probably due to the molecular arrangement of the atoms and not to the atoms themselves also perhaps partly to Crystallographic condition, as we know annealing greatly effects conductivity - also impurities in small quantity dissolved in the metal. possibly the ion theory a la Rudium may account for the difference partly as metals of high atomic weight are the poorest conductors per pound of wire - in any event the poor conductivity seems to be due to internal friction or vibration of the atom communicating heat waves to the external Ether and thus transfer the Zn-O Energy to ~~space~~ outside matter.

11 The only way we can get this
Zero Energy to perform mechanical
work is to connect to the wire of
the circuit some kind of matter which
can be stressed to a limit by ether
waves. and so arranging this matter
so that as fast as one portion of it
under the influence of the ether
is stressed nearly to its limit it is
withdrawn from the stressing action
and a fresh lot of the same matter
brought but within the influence to be stressed
in the meantime the 1st portion is
unstressed, By this means by using
matter half of which is being stressed
nearly to its limit while the other
half is losing it - we have a combination
of matter with a stress limit
acting as if it had no limit hence
we have the conditions for a
continuous current. If the effect this matter
is iron, the conditions a motor
The act of rotation prevents the total
iron from having a stress limit
if this motor runs a dynamo we get
current transferred

12 It does not matter what the nature of the matter is, iron or X as long as it can be stressed by ether waves and has a limit it can transfer energy either alternating or continuous, the later if a battery current, and this through non conductors.

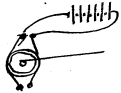
13 for instance this device should permit a continuous current to flow in a battery circuit if above theory ok



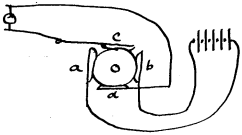
a is metallic drum coated with say thin layer gutta percha e is the shaft whereby drum is rotated. Rubbing on the gutta surface is a sheet of metal foil the battery is connected to c + commutator or connector d. On ~~wheel~~ on

rotating the drum half of the gutta is stressed and as fast as parts pass from under the foil to be unstressed fresh unstressed matter passes under it. If this device is faulty by reason that the gutta passing out of the influence of the drum + foil does not unstress itself perhaps following change will improve it

14

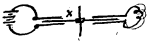


This will give a current in the circuit I think and tend to rotate as a motor. Of course this is very defective as we have rubbing friction it is possible it can be improved thus.



If drum rotated a continuous current should pass thru a b + the gutta film and metallic drum – This will give a continuous current into c.d. by the unstressing of the gutta
a further improvement would be to not have the foils actually touch the gutta but kept in very close proximity then the loss due to air space could be made up by rapid rotation of the cylinder

16-

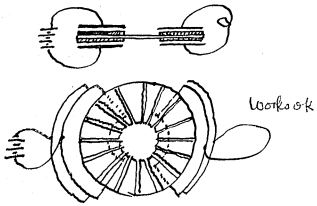


Disc form is probably better will this act as a motor x mica or quitta, -
Tried this for telephone its OK

17

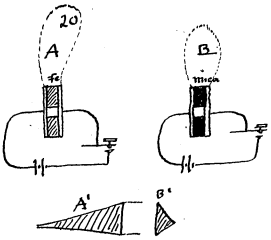
No continuous current can be obtained from a battery where the liquid is composed entirely of compounds because the slight initial combustion would instantly stress them to the limit and produce insulation or contrary stress voltage exactly equal to the combustion voltage + balance = To have continuous current there must be free elementary atoms in the liquid which have no stress limit. This would show that the disassociation ionic theory is correct,

Another form of 16 thus



19

Now comes the mystery of magnetism why does iron for instance have a stress limit, when subjected to energy in form of waves in the Ether, and why does it act just the opposite to compound matter when in the act of being stressed



On closing the circuit of A a wave of current proceeds in the circuit represented by A' becoming constant when the iron has reached its stress limit for that particular current. The stress wave opposing the current wave in the circuit

In the case of B the opposite action takes place and the stress is of the opposite character.

20.

I understand iron when it expands diminishes in capacity to bring stressed but compounds or diaelectrics act just the opposite. Therefore.

21

The iron of A contracts when bring stressed while the Mica Expands.

22

Why does the iron contract. Is iron a compound ion, two iron ions combined together which are decomposed by the energy of the ether waves and thus favor contraction, work being expended in decomposition, ~~the result~~ the normal state being combination or is it just the opposite the normal state being free and the effect of the ether waves is to bring about combination and thus prevent further conduction of ether waves, limiting the stress.

23

In re 21 Iron may expand (in relation to the ether waves) in one direction and contract in another and the may be so with diaelectrics

24

Iron expanding at right angles to the current, and diaelectrics in the direction of the current, contracting
however this expansion of iron at right angles and contraction in the direction of current might still be due to ionic compounds of iron with iron.

25

Possibly the phenomenon that the ether waves cause a deformation of the mass of the iron in a direction depending on the advance of the wave, and this deformation is resisted by the cohesiveness of the atoms molecules or crystals of the iron Molecules or crystals of iron would probably have no polarity, being ionic or elements, where a diaelectric or compound, formed of systems of two different kinds of elements would already have polarity. In the case of iron the polarity is created only by the ether waves, and thus we

26

have an instance of polarized ions combined with each other in contradistinction to a polarized non disassociated diaelectric

27

If this is so then other ions of two dissimilar elements dissolved one into the other as an alloy might form a polarized ionic system and become magnetic – (12) the 2 elements although an alloy and forming a single substance apparently both substances disassociated or in the ionic condition become associated to a compound under the influence of the ether waves and thus have a stress limit –
We have such an alloy in Mn Sb. which I understand is more magnetic than Nickel.

2

Therefore, Magnetizable Bodies are masses of dissociated ions of an element or elements all the atoms of which are in the ionic condition, all held together in an elastic body having cohesion, and that the passage of an electric waves in the vicinity of this body causes association and a polarized condition of ions longer ionic, hence acquiring a stress limit like other non dissociated compounds, and upon cessation of the electric waves dissociate automatically into ions, Except in case where the compound is constrained and prevented from dissociating by increased cohesion due to hardening or the Carbon entering into the compound preventing its auto dissociation, as is the case with steel

Why do magnetic lines pass freely thru
diaelectrics without scarcely doing any
work, meeting practically no resistance
Are they in motion or are they fixed
and static, simply a stress in the ether
without vibration or undulations of any
kind or requiring any energy to maintain
them
An electric charge or stress on a ball
in high vacuo will retain its stress for
weeks and immitate the lines we
see thrown out by a magnet as evidenced
by filings. Bodies can be brought near
and charged by induction and then
removed and discharged requiring
off energy. This can be done many times
and yet the ball in vacuo apparently
loses none of its charge. The energy
comes from the muscle power of the
Experimenter
Its the same with a permanent magnet
any number of additional magnets
can be charged and removed
without loss of magnetism in the
first magnet. This energy comes from
the Experimenter

It took more power to pull the magnet away than the unmagnetized gave when brot to it, the surplus energy being supplied by the Experimtr.

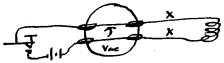
I think it pretty clear that magnetic lines are fixed and static as they are in too close connection with matter not to lose energy if they were moving — Magnetism is the polarization of ionic compounds formed + polarized by energy from waves in the ether,

It seems to me a condenser charge is simply a short circuit through the ether of very much lower resistance than a metallic circuit but as the diaelectric compounds get polarized they no longer permit the current to pass through the ether
The energy lost in the Etheric short circuit is entirely lost and not returnable to the circuit but that

Portion of the current which went to stress the dielectric is returned to the circuit on discharging -
This is probably the reason why wireless requires rapid oscillation so as to make dielectric resistance diminish & get longer contact with the ether, allowing a large supply to enter.
Ultra violet light shining on the end of mast wire or a flaming or the arc in Quartz should greatly assist in making contact with the Ether at both ends —

If it were possible to prevent and keep all stressible matter away from a metallic circuit there could be no canalization of electricity It would not exist, as for instance in a battery the Combustion effects would go direct to the ether like a candle burning the ether would have no resistance no drop to reduce temperatures due to the combn of say Zn O and the temp would reach very high

If part of a circuit was to be put in a vacuum thus.



And the vacuum made so there was no residual compounds of any kind therein no current would ever pass to x x it would be short circuited by the ether or ions in the residual.
If there was a slight layer of molecules on the wire no current would pass. they would stress, but if these were decomposed to ions by radium for instance we should then have perfect conduction,

To return to the magnet. In the passage of a ½ part of a perfect loop of copper wire through a gap of a ring magnet The current generated forms lines which reading on the lines of the,

magnet, distort them, and produce a resultant group of lines which cause a twist in one direction when passing in ½ of the loop, and a twist in the opposite direction on passing out

This does not explain why one leg of the loop always has the current circulating around the loop right hand on passing in and left hand on passing out.
The loop is perfectly uniform, the same in every point, What gives direction to the current?

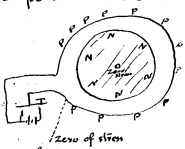
The only thing I can find that is not symetrical in the operations is that one side of the wire is passing through stronger fields than the other side as it passes in I refer to a single wire, there must be a local flow of current a la Foucault
This might with the lines it produces give the initial start in the right

direction, because on passing out the opposite condition obtains, this initial action is of course over powered by the main current which continues in the right direction notwithstanding the original focault ceases at the maximum density of lines & is even reversed before it is within the magnetic loop.

It is impossible to charge P & N a metal. metals have free ions, except by continuously supplying energy to keep the charges static so to speak. Like a battery and an open circuit

May not the explanation of magnetism being dependant on the ~~ampere~~ current ~~turns~~ and nothing ~~else~~ be due to the fact that a single turn around a bar of iron the action could be explained by supposing the ampere turn was positive or high potential, on starting the current, the iron would be charged N or P. cant say which just now. all around the outer part falling to zero stress

or potential at the center of the bar

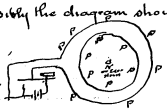


until the iron had need full stress due to the current unit amp turn,

Static action or stress in the dielectric would occur but it would be masked by the greater capacity for stress of the iron owing to its being a conductor or ionic

This dont explain polarity of the iron which is apparently at right angle to the wire.

Possibly the diagram should be thus



As magnetism is not changed by drop of voltage in the wire of the ampere turn the stresses in the iron would be symetrical.

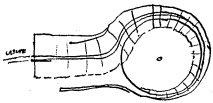
The constancy of this stress requires a continuous supply of energy - or rather pressure.

Regarding the direction of the poles in the iron, it may be due to the little circuits with current in the iron which are positioned by the stress and set at right angles to the wire turn, a la the old theory I cannot believe there are currents in the iron, if it was so the local action currents of Gladstones Copper Zinc couple ought to become magnetic in an energized helix

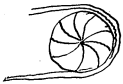
Certainly the current action itself causes the iron to throw out lines of stress which are the same or opposite of the wire stress lines + thus tend to oppose the passage of the Current or wave front + this continues until the stress due to that particular current has reached its limit

Perhaps the wave over the Wire passes thus

If wound around a magnet or iron it may be thus

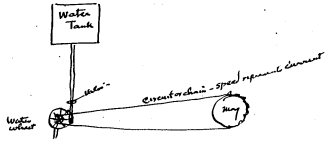


This may give a twist to the core the center being fulcrum or position of no twist to molecules and circumference greatest twist thus



The trouble with this device is that if E was matter it would return it over the circuit in the wrong direction when the Torque sprung back to normal.
if there was a twist against the current then the direction would be ok.
when battery disconnected,

A maget acts like a fly wheel.



On account of inertia Mag starts slow after water ~~[illegible]~~ stopped the mag gives up its acquired energy

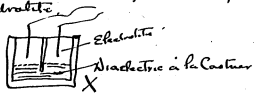
Cont do it May 20 1907

Have Dally try to seal quartz with glass, to get Quartz windows in Vac chambers.

Try in tube with Nickel flake precipitated Cupric hydroxide it might possibly go to CuO_2 & hold there if kept cold with Ice & hot on other pole — Thermo Elec

Thermo elec — Perhaps may be bothered by thermo Current at junctions where I use 2 liquids. Can probably nullify it or neutralize it by 3rd liquid & 2 sand partitions.

to bottom in contact with one pole, other pole in an electrolite



Might get some interesting results in X phenomenon desired in the insulating.

fluid + neutral KCl NaCl etc on electrolysis show red at junctures - or a heavy condenser discharge. This would show the primary reactions of electrolysis. If the radical Dry Ethyl was soluable in the non electrolite we might in this way electrolize - Everything + have a new means of investigating - With Tetrachl Carbon might transfer Cl & substitute K.
It may be possible that reason certain liquids do not conduct is that they cannot make molecular transfers between a solid and a liquid but can between liquids & liquid + above instrument may be important. Try Ether + see if Chlorides which are sol therein will allow transfer under above conditions.

Its possible Thermo Electric currents has something to do with Allotrophy changing from Amorp to Crystaline + that all thermo couples will show fatigue at as the reaction approaches a finish Its like fatigue or end of the stress in X ray fluorescers, X ray causes white phos to change to red, Sb from amorp to Crystaline Explosively - if this was Exceedingly slow reaction would get a Current for weeks.

Kinetoscope with fluorescent Oxalate Lithia use Quartz lense for projecting to get Ultra violet waves

There is no reason if can get rid of the Coarse grained Emulsion why Kineto pictures cant be taken 1/8 square inch of 1/2"

Possibly can take 2 Reg Ni Storage cells oppose them heat one, other cold, + cause heat to give a surplus current + by reversing heat keep them continuously charged - Perhaps Ni Storage is not best Combn Crova did this on something Compt Rendus lxviii 440.

Test organic matter alkalis, just tint with permanganate K neutral, it will turn green if any reducing agent in it might adopt this test.

Momentary contact of one metal with another, one hot the other cold, see what diference in Volts, amperes, it makes if cleaned + used instantly, also try putting films on end of metal of extreme thinness by immersing into Electrolytic Cell + c Coung Current for fraction of seconds,

In making artificial Sulfide Copper make every proportion of S to Cu until it ceases to conduct hot ditto Se Te P. Sb

Thermo contact Electricity after all may be analagous to Cementation or slow combination between solids say CuS + Cu heat gradually cause S to pass into the metallic copper secured to the end of the CuS of Becquerel + thus a slow reduction of CuS to Cu_2S takes place + gives the Current, I understand all thermos show fatigue + hence are not constant or Commercial, Becquerels pile should probably have been constructed so it could have been reversed once a week + if the Cu_2S would go to CuS under action of the Current the pile would be healthy – Think a pile or Cell of above principal is ok Can be constructed where action is very rapid + powerful + Reversable permitting transfer heat to Elec economically

See if LiOH, Cleans Nickel which is yellow from action in KOH, also if dissolves $Ni(OH)_2$
LiOH alone cleans it pretty good

Lithium is a metal with which very little seems to have been done compared to K + Na. Yet it is wonderful for being so close to H in atomic w. H being the active member of acids + almost everything, H_2O - etc. Experiments with lithia ought to show something good in physical electrolytes -

See if $Ni(OH)_2$ dehydrated to white NiO by hot 33% KOH or stronger is active in LiOH - its not in KOH, if active by LiOH, then show delight of $NiOH_3$ is trouble with battery.

Thermoelectrolytic Take 2 Fe battery test irons discharge to Zero. Heat one this may bring out the latent capacity + charge the other.

See if LiOH dissolves ferrous or ferric oxides also stuff deposited on Ni or Pt strips when electrolyzing KOH. also Pt strip and iron test pocket, also if it cleans old Ni pockets,

Can prove if Becquerels Cub gradually detorates by use one element on a steam pipe other water pipe, measure V + Ct weekly

Castner KS both sides CS_2 in bottom in which little S dis by one side KOH other KS see if transfer possible

Thallium or Manganese has very little afinity for S. Hg + Cu great afinity use KS in KOH, and see if can get storage — possibly can find an endothermic Bi or tri sulphide, this would be good.

In the Cellulose in Chl Zn for filaments incorporate recovered long well mixed Nickel Mix graphite, then squirt + make long filament + probably flash by making it 002 could probably get it 2 ft long + thus diminish falling Emf per unit — + stop carrying + blackening

In using Magnesium powder to flash in room with slides containing crystals. Note fluorescence and they make better flashes with different oxides of metals incorporated with the Magnesium powder to see if there are specific fluorescence.

See if fluorescence act same under different liquids also under pressure

Make lot of Lithia salts analogous to Oxalate for fluorescence — Benzoate Lithia, also Rare + heavy metals with Lithia,

Make some $N_2(OH)_2$ by precipitating the Sulphate by $LiOH$. make test group 1/2 wash not filtered dried low heat,

See if Zinc plates over good on Magnesium Cathode in $LiOH$ alone also 15% $NaOH$, 8% $LiOH$,

See how Zinc in 21% Kott, with Silicate Soda Great proportion plates over on Magnesium Electrode,

See if Mosaic gold Sulphide tin will or can be substituted for Nickel to get flake

Emq- Cylinders of Sulphides - Mmi B; pens metals, & other Sulphides
Ditto Cylinders Selenium, Selenides
Tellurium, Tellurides Arsenic
Arsenides, Phosphorous (Red)
Phosphides, Antimonides, Vanadium
Oxides alloys,

Photo through a group of crystals of all Hydes all which absorb
Light = ditto in power field of
Microscope = Beam light right angles
Ditto flash light / Hg arc thru
Quartz - Elec Arc X ray at
same time stressing Crystals

See if Emq is effected by temperature

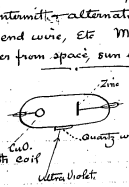
Moisten Emq cylinders with KOH, NaOH, LiOH, containing metals held in solution by Citric acid — also Cyanide

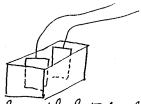
Try Acetone, in Emq d

Try also Tartaric acid to hold oxides in KOH,

Try Lime Ba + Sr water,

Connect to earth a wire then at end use Vac X ray stage and higher, Hg Arc Quartz window + connect with Ether, Use XYZ + other receivers intermitt + alternate connections magnetize end wire, Etc May be oscillations in the Ether from space, sun spots etc.





Cell with alum-alf electrodes, plain + with oxides on
Heat rays absorbed to to E waves.

Transparent Crystals containing Silver salt as
an ingredient fluorescor

Crystalize in Vacuo using H_2SO_4 as H_2O
absorber

If LiOH takes out Silica from $NiOH_2$ pole wash
it out of regular $NiOH_2$ by percolating hot
use ½ wash not filt dried low heat then drop
make a test group of cells —

Dr Grothe assay liquid ~~out~~ from bad cells
then liquid with LiOH which has been regenerated
to see what LiOH removes.

Get some large record Cook's Special to
lay flat.

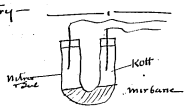
Found iron a powder must avoid like all other iron — Then was Fe with Cu + Reversed many times

When I went South left 3 Fe's that were reversed long time, get them, examine, then D.T.A. for Cu thy Fe —

Metallic Lithium + Bismuth or other metal having lowest specific heat in vacuo, ought to give good thermo, using radiation only

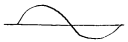
See if XYZ at recalescent point of iron vibrate heat above + below the point Barrett's phenom —

Some of the rings of alloys to test induction kick — try at different temp also heated nearly to M.P. + throw into cold brine to chill then try —



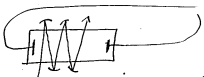
Should conduct E or Energy

To change alternating currents use Kott cell with plates plated with Cobalt, 200 or more plates in E 18.

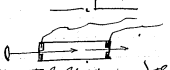


Before

2 Electrolites, porous partition - heat junction



Reflect radiant heat + light across electrolite get fall same as different metals, plain + plating solutions Hg arc, sun - Carbon arc



Tube, alternate light 1st one end then the other

alum.

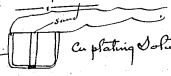
some solution, absorb rays above red which are reducing mixed with non polar + plating solutions.

Nickel plating solution, silent discharge plate films on surface of liquid

Try get smoke or Vortex rings on throwing coal in Cement Kilns

x non cond very fine hole thru it polished Ag plate, Cu etc

plating solution see if plate circles on mounting currents



Cu plating solution

Change earth plate from one to the other

See if Edison effect is changed by a magnet absorb Hg by Al + see if diminished, try iodine, Excess Hg, Tin amalgam

Well prices

3"	3.5"	4"	4.5"	5"	[illegible]
1.00.	1.25"	1.50	1.65	2.5	[illegible]